

UNIVERSITÉ DE SHERBROOKE

Les facteurs affectant les taux de réussite
des cours d'anglais et de sciences humaines
des étudiants dans les programmes de formation technique

par

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Essai présenté à la Faculté d'éducation

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UNIVERSITY OF SHERBROOKE

Factors Affecting the Completion Rates of
English and Humanities Courses
by Technology Students

by

M.J. Louise Robinson-MacLean

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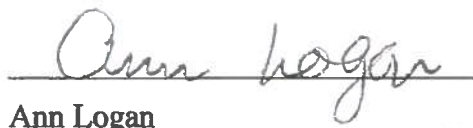
Maîtrise en enseignement au collégial

Les facteurs affectant les taux de réussite
des cours d'anglais et de sciences humaines
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par

Louise Robinson-MacLean

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1937-1938

SUMMARY

Many of Vanier College's technology students do not graduate from their programs within the scheduled three years. A closer investigation of the problem revealed that in many of these cases these students had completed all of their program professional courses but still had English and/or Humanities courses to complete and thus had to extend their stay at college for one or more semesters in order to complete their college degrees.

The purpose of this research was to discover if there was any significant measure of association between a student's family cultural background, primary home language, secondary school language of instruction, high school average and/or English placement level and the likelihood of him or her succeeding in his or her English and/or Humanities courses within the three years of his or her Program. Because of both program and demographic differences between 'hard' and 'soft' technologies, including student population (more specifically gender ratios and student average ages in specific programs), program writing requirements and practical skill program activities, the research was limited to the hard technologies where students work hands-on with hardware and/or computers.

As a result of the review of current literature and observations made at Vanier College, eight main research questions were generated. The research questions were broken down into a total of 54 hypotheses. These hypotheses were required to address a total of seven independent variables and eleven dependent variables. The students' assessment of their abilities to speak, read and write in English and their likelihood of succeeding in their Humanities and English courses was examined in

relation to their language and cultural background, their secondary school language of instruction and their English course placement level on entering the college.

The data required to address the hypotheses were collected from two sources, from the students themselves and from the College. Fifth and sixth semester students in the selected programs were surveyed to collect personal information including family cultural and linguistic history and current language usages, high school language of instruction, perceived fluency in speaking, reading and writing in English and perceived difficulty in completing English and Humanities courses. The College provided current academic information including copies of college program planners and transcripts, and high school transcripts for students who attended a high school in Quebec. Quantitative analyses were done on the data using the SPSS statistical analysis program.

Of the fifty-four hypotheses analysed, in fourteen cases the results supported the hypotheses, in the forty other cases the null hypotheses had to be accepted. Although a strong significant association was found between a student's primary home language and place of birth and his or her ability to communicate in English (speak, read, and write), the two most significant findings were the association found between a student's English entry placement level and the number of English courses failed and the association between the parents' place of birth and the student's likelihood of succeeding in both his or her English and Humanities courses. According to the research results, students who were placed in the lowest entry level of College English failed, on average, at least three times as many English courses as those placed in any of the other English entry level courses. These results are significant enough that they will be brought to the attention of the College administration.

The results of this research also appear to indicate that the most significant determining factor in a student's likelihood of completing his or her English and

Humanities courses is whether his or her parents were both born in Canada or not both born in Canada. Students who had at least one parent who was not born in Canada would, on average, fail a higher number of English courses, be more likely to still have at least one English course left to complete by the end of the 5th semester, fail more Humanities courses, be more likely to still have at least one Humanities course to complete by the end of the 5th semester and on average, have more combined English and Humanities courses to complete at the end of their 5th semester than students with both parents born in Canada.

Although the sample size for this research was only 60 students and more research needs to be conducted in this area, these results are significant. If the entering students that will be more likely to have difficulty in completing their English and Humanities courses can be identified by the College at admission, the College will now have the opportunity to intercede during the first semester, and offer these students the support they require, whether it be classes or courses specifically designed to meet their needs, special mentoring, tutoring or other forms of support. With the necessary support, these students may have a greater opportunity of successfully completing their programs within the scheduled three years, while at the same time the College will have improved its capacity to meeting the needs of its students.

RÉSUMÉ

Une large proportion d'étudiants des programmes de formation technique au Cégep Vanier n'obtiennent pas leur diplôme d'études collégiales dans le délai de trois ans prescrit pour leur programme. Une analyse plus approfondie du problème démontre que dans plusieurs cas, ces étudiants avaient complété tous leurs cours spécifiques au programme mais non les cours d'anglais et de philosophie requis. Heureusement, la plupart de ces étudiants restent au cégep une session ou deux de plus afin de compléter les cours requis pour le diplôme; cependant, certains choisissent le marché du travail sans compléter ces cours ni obtenir leur diplôme.

L'objectif de cette recherche était de découvrir s'il y avait un lien significatif quelconque entre les origines linguistiques familiales de l'étudiant, ses origines culturelles, sa moyenne au secondaire et/ou ses résultats au test de classement en anglais, et ses chances de compléter ses cours d'anglais et de philosophie dans le délai prescrit de trois ans. Compte tenu des nombreuses différences entre les programmes de formation technique en termes de profil étudiant - sexe et âge en particulier - et d'exigences au niveau de l'écrit et de la pratique, il a été décidé de limiter cette recherche afin d'avoir un échantillon plus uniforme. La recherche porte donc uniquement sur les techniques où l'étudiant est appelé à travailler de façon pratique sur l'ordinateur et où les exigences au niveau de l'écrit et de la recherche sont dans l'ensemble peu élevées.

Huit questions de recherche ont été élaborées sur la base de la littérature actuelle sur le sujet et sur les observations recueillies dans l'un de ces programmes au Cégep Vanier. Ces questions avaient pour objectif d'examiner différents aspects de la performance des étudiants dans les cours d'anglais et de philosophie, tels que les taux d'échec et de persévérance, et le nombre de cours qui n'avaient pas été complétés après la cinquième session. Elles permettaient également d'analyser comment les étudiants évaluaient leur niveau de communication en anglais. Les huit questions étaient réparties en 54 hypothèses. Le grand nombre d'hypothèses s'explique par la nécessité de couvrir une total de sept variables indépendantes: langue essentiellement utilisée à la maison, langue d'enseignement au secondaire, lieu de naissance de l'étudiant (Canada/autre que Canada), lieu de naissance des parents (les deux nés au Canada ou non), la moyenne au secondaire et le niveau de classement en anglais (résultat du test de classement en anglais lors de l'admission au Cégep Vanier); et 11 variables dépendantes: nombre de cours d'anglais complétés, nombre de cours d'anglais échoués, cours d'anglais complétés ou non à la fin de la cinquième session, nombre de cours de philosophie complétés, nombre de cours de philosophie échoués, cours de philosophie complétés ou non à la fin de la cinquième session, nombre total

de cours d'anglais et de philosophie non complétés et l'évaluation des étudiants de leurs propres compétences en anglais.

Les données utilisées pour répondre aux hypothèses provenaient de deux sources, des étudiants eux-mêmes et du collège. Des sondages auprès d'étudiants de cinquième et sixième session en Technologie de la mécanique du bâtiment, Technologie de systèmes ordinés, Techniques de l'informatique et Technologie de l'électronique industrielle ont permis de recueillir des renseignements personnels tels que les antécédents culturels et linguistiques de la famille, la pratique des langues utilisées, la langue d'enseignement au secondaire, la perception qu'a l'étudiant de ses compétences en anglais et sa perception de la difficulté qu'il a à compléter ses cours d'anglais et de philosophie. Le collège quant à lui a fourni des renseignements sur le dossier académique actuel des étudiants - y compris des copies des profils et des bulletins - ainsi que les bulletins du secondaire pour les étudiants ayant fréquenté une école secondaire au Québec. Des analyses quantitatives des données ont été faites avec le logiciel SPSS.

Sur les cinquante-quatre hypothèses analysées, dans quatorze des cas les résultats confirmaient les hypothèses alors que dans les quarante autres cas, ils les infirmaient. Une des observations obtenues confirmait qu'il y avait un lien significatif entre la langue essentiellement utilisée à la maison et le lieu de naissance de l'étudiant, et sa perception de son niveau de communication en anglais. Et les étudiants dont la langue essentiellement utilisée à la maison n'était pas l'anglais et ceux qui n'étaient pas nés au Canada se considéraient généralement plus faibles en anglais que ceux dont l'anglais était la langue d'usage essentielle à la maison. Bien que cette observation soit importante, les deux observations les plus significatives furent le lien établi entre le niveau de classement en anglais de l'étudiant à l'admission et le nombre de cours d'anglais échoués ainsi que le lien entre le lieu de naissance des parents et les probabilités de succès de l'étudiant dans ses cours d'anglais et de philosophie.

Les résultats de la recherche ont démontré qu'en général, la moyenne des cours d'anglais échoués par les étudiants classés à l'admission dans les cours d'anglais de premier niveau de première année variait considérablement du nombre de cours d'anglais échoués par les étudiants classés à l'admission à tout autre niveau de cours d'anglais de première année. Dans l'échantillon utilisé pour cette recherche, les étudiants classés à l'admission dans les cours d'anglais de premier niveau de première année échouaient en moyenne trois fois plus de cours d'anglais que les étudiants classés à l'admission à tout autre niveau de cours d'anglais de première année. Ce résultat est assez important pour être rapporté à l'administration du Collège.

Les résultats de cette recherche semblent également indiquer que le lieu de naissance des parents (Canada/hors Canada) est le facteur le plus déterminant pour un étudiant quant à la probabilité de terminer ses cours d'anglais et de philosophie. En moyenne, les étudiants dont au moins un parent n'était pas né au Canada présentaient les

caractéristiques suivantes par rapport à ceux dont les deux parents étaient nés au Canada: ils échouaient un considérablement plus grand nombre de cours d'anglais; la probabilité qu'il leur restait au moins un cours d'anglais à compléter à la fin de la cinquième session était considérablement plus élevée; ils échouaient un considérablement plus grand nombre de cours de philosophie; la probabilité qu'il leur restait au moins un cours de philosophie à compléter à la fin de la cinquième session était considérablement plus élevée; et la probabilité qu'il leur restait des cours d'anglais et de philosophie à compléter à la fin de la cinquième session était elle aussi considérablement plus élevée. Ce lien marqué entre le lieu de naissance des parents et la probabilité que l'étudiant réussisse ses cours d'anglais et de philosophie en dedans des trois ans prescrits au programme semble indiquer que l'acculturation est un facteur plus significatif à cette réussite que la langue ou la moyenne au secondaire pour lesquelles aucun lien significatif n'a été trouvé pour aucune des variables dépendantes associées au cours d'anglais et de philosophie.

Bien que l'échantillon utilisé pour cette recherche n'ait été que de 60 étudiants et qu'une recherche plus approfondie soit nécessaire dans ce domaine pour vérifier si les résultats obtenus s'appliquent à d'autres groupes d'étudiants au Collège, ceux-ci sont tout de même significatifs. Si le Collège est en mesure d'identifier dès leur admission les étudiants les plus susceptibles d'avoir des difficultés à compléter leurs cours d'anglais et de philosophie, il pourra intercéder et leur apporter du soutien dès la première session ou même avant. Ce soutien pourrait prendre la forme de cours directement liés à leurs besoins spécifiques, de mentorat, de tutorat ou de toute autre forme. Avec le soutien adéquat, les étudiants identifiés augmenteront leurs chances de compléter leur programme dans les trois ans prescrits et le Collège aura amélioré sa capacité de répondre adéquatement aux besoins de ses étudiants.

ABSTRACT

A large percentage of Vanier College's technology students do not attain their College degrees within the scheduled three years of their program. A closer investigation of the problem revealed that in many of these cases these students had completed all of their program professional courses but they had not completed all of the required English and/or Humanities courses. Fortunately, most of these students do extend their stay at the college for the one or more semesters required for graduation, although some choose to go on into the workforce without returning to complete the missing English and/or Humanities and without their College Degrees.

The purpose of this research was to discover if there was any significant measure of association between a student's family linguistic background, family cultural background, high school average, and/or College English Placement Test results and his or her likelihood of succeeding in his or her English and/or Humanities courses within the scheduled three years of the program. Because of both demographic differences between 'hard' and 'soft' technologies, including student population, more specifically gender ratios and student average ages in specific programs; and program differences, including program writing requirements and types of practical skill activities required; in order to have a more uniform sample, the research was limited to the hard technologies where students work hands-on with hardware and/or computers and tend to have overall low research and writing requirements.

Based on a review of current literature and observations made in one of the hard technology programs at Vanier College, eight research questions were developed. These questions were designed to examine different aspects of success in the English and Humanities courses such as failure and completion rates and the number of courses remaining after the end of the fifth semester and as well examine how the students assessed their ability to communicate in English. The eight research questions were broken down into a total of 54 hypotheses. The high number of hypotheses was required to address a total of seven independent variables: primary home language, high school language of instruction, student's place of birth (Canada, Not-Canada), student's parents' place of birth (Both-born-in-Canada, Not-both-born-in-Canada), high school averages and English placement level (as a result of the College English Entry Test); and eleven dependent variables: number of English completed, number of English failed, whether all English were completed by the end of the 5th semester (yes, no), number of Humanities courses completed, number of Humanities courses failed, whether all the Humanities courses were completed by the

end of the 5th semester (yes, no), the total number of English and Humanities courses left, and the students' assessments of their ability to speak, read and write in English.

The data required to address the hypotheses were collected from two sources, from the students themselves and from the College. Fifth and sixth semester students from Building Engineering Systems, Computer and Digital Systems, Computer Science and Industrial Electronics Technology Programs were surveyed to collect personal information including family cultural and linguistic history and current language usages, high school language of instruction, perceived fluency in speaking, reading and writing in English and perceived difficulty in completing English and Humanities courses. The College was able to provide current academic information on each of the students, including copies of college program planners and transcripts, and high school transcripts for students who attended a high school in Quebec. Quantitative analyses were done on the data using the SPSS statistical analysis program.

Of the fifty-four hypotheses analysed, in fourteen cases the results supported the research hypotheses, in the forty other cases the null hypotheses had to be accepted. One of the findings was that there was a strong significant association between a student's primary home language and place of birth and his or her perception of his or her ability to communicate in English (speak, read, and write) signifying that both students whose primary home language was not English and students who were not born in Canada, considered themselves, on average, to be weaker in these skills than did students whose primary home language was English. Although this finding was noteworthy, the two most significant findings were the association found between a student's English entry placement level and the number of English courses failed and the association between the parents' place of birth and the student's likelihood of succeeding in both his or her English and Humanities courses.

According to the research results, the mean number of English courses failed, on average, by students placed in the lowest entry level of College English was significantly different from the number of English courses failed by students placed in any of the other entry level English courses. In this sample students who were placed in the lowest entry level of College English failed, on average, at least three times as many English courses as those placed in any of the other English entry level courses. These results are significant enough that they will be brought to the attention of the appropriate College administration.

The results of this research also appeared to indicate that the most significant determining factor in a student's likelihood of completing his or her English and Humanities courses is his or her parents' place of birth (both-born-in-Canada or not-both-born-in-Canada). Students who had at least one parent who was not born in Canada, would, on average, fail a significantly higher number of English courses, be significantly more likely to still have at least one English course left to complete by

the end of the 5th semester, fail a significantly higher number of Humanities courses, be significantly more likely to still have at least one Humanities course to complete by the end of the 5th semester and have significantly more combined English and Humanities courses to complete at the end of their 5th semester than students with both parents born in Canada. This strong association between students' parents' place of birth and their likelihood of succeeding in their English and Humanities courses within the three years of their program appears to indicate that acculturation may be a more significant factor than either language or high school averages, for which no significant association was found for any of the English and Humanities related dependent variables.

Although the sample size for this research was only 60 students and more research needs to be conducted in this area, to see if these results are supported with other groups within the College, these results are still significant. If the College can identify, at admission, the students who will be more likely to have difficulty in completing their English and Humanities courses, the College will now have the opportunity to intercede during or before the first semester, and offer these students the support they require in order to increase their chances of success in their education, whether it be classes or courses designed to meet their specific needs, special mentoring, tutoring or other forms of support. With the necessary support, the identified students will have a greater opportunity of successfully completing their programs within the scheduled three years, while at the same time the College will have improved its capacity to meeting the needs of its students.

The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The second part of the paper is devoted to a discussion of the structure of the nucleus. It is shown that the structure of the nucleus is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The third part of the paper is devoted to a discussion of the structure of the molecule. It is shown that the structure of the molecule is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles.

The fourth part of the paper is devoted to a discussion of the structure of the crystal. It is shown that the structure of the crystal is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The fifth part of the paper is devoted to a discussion of the structure of the liquid. It is shown that the structure of the liquid is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The sixth part of the paper is devoted to a discussion of the structure of the gas. It is shown that the structure of the gas is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The seventh part of the paper is devoted to a discussion of the structure of the plasma. It is shown that the structure of the plasma is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The eighth part of the paper is devoted to a discussion of the structure of the solid. It is shown that the structure of the solid is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The ninth part of the paper is devoted to a discussion of the structure of the liquid crystal. It is shown that the structure of the liquid crystal is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles. The tenth part of the paper is devoted to a discussion of the structure of the polymer. It is shown that the structure of the polymer is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and the momentum of the particles.

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LIST OF ABBREVIATIONS, INITIALISMS AND ACRONYMS

BICS	Basic Interpersonal Communication Skills
CALP	Cognitive Academic Language Proficiency
CEGEP	<i>Collège d'enseignement général et professionnel</i> or College of General and Professional Education
DEC	<i>Diplôme d'études collégiales</i> or College Diploma
DEP	<i>Diplôme d'études professionnelles</i> or Diploma of Professional Studies
ESL	English as a Second Language
L1	Primary or mother tongue language
L2	Secondary language of the student
MELS	<i>Ministère de l'Éducation, du Loisir et du Sport</i> or Ministry of Education, Leisure and Sports
MEQ	<i>Ministère de l'Éducation du Québec</i> or Ministry of Education of Quebec (now referred to as MELS)
RAU	Rand Afrikaans University
SPSS	Statistical Package for the Social Sciences
TLC	The Learning Center – Vanier College's Center for helping students with academic difficulties in their studies

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I would like to dedicate this research project and report to my family: my husband Tom, and my children Gillian, Caitlin and Dylan who were very supportive during the eight years I spent taking courses and working on my Education degrees. Thank you all and I am forever grateful for your time and patience.

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CHAPTER ONE

INTRODUCTION

Although the majority of the sixth semester Vanier College technology students have completed all of their technical courses within the standard three years of their Program, many students still do not graduate at the end of this three-year time period. The difficulty appears to be with the students completing their required core courses within this prescribed three-year period, more specifically the required four English (Curtis, 2003; Vanier College General Studies, 2003) and/or three Humanities courses (Vanier College General Studies, 2003). This situation exists because the affected students have dropped, failed and/or deferred one or more of these required courses. For those students that do complete all required courses and graduate on time, some either chose to, or were obligated to make up these English and Humanities courses as intensives during January, May, and/or August.

This research focused on the hard technology students registered in the Building Systems Engineering, Computer and Digital Systems, Computer Science, and Industrial Electronics Technology Programs at Vanier College with the purpose of discovering if there was any significant measure of association between a student's family cultural background, primary home language, secondary school language of instruction, high school average and/or English placement level and the likelihood of him or her succeeding in his or her English and/or Humanities courses within the three years of his or her Program.

1. POST SECONDARY EDUCATION – PROVINCE OF QUEBEC

To fully appreciate the problem, a basic understanding of where technology programs are situated within the educational structure of the province of Quebec, Canada is required. In Quebec, after successfully completing high school a student has two main options for continuing his or her education. The student can attend a college and earn a DEC (*Diplôme d'études collégiales*, College Diploma) or can attend a vocational school and earn a DEP (*diplôme d'études professionnelles*, Diploma of Professional Studies). If the student chooses a college education, this can be obtained through public colleges called CEGEPs (*Collège d'enseignement général et professionnel*, College of General and Professional Education) or private colleges (L'Ecuyer, 2004).

Colleges offer two options: two year pre-university programs, which Quebec high school graduates are required to take in order to attend university, or three year technology programs that are intended to lead students to the workforce, but under certain conditions may also prepare students for university. This research is concerned specifically with the college hard technology programs, more specifically those at Vanier College in Saint Laurent, Montreal, Quebec.

The college technology programs are situated at a practical and theoretical level between the related university and vocational programs. The vocational programs focus mainly on training, rather than education, on the practical techniques required rather than the theory behind them, and vary in duration from 14 months to two years depending on the program of study. The college technology programs focus on a combination of education with practical training and are three year programs, include an extensive general education component (first and second language courses, humanities and physical education) that totals approximately one year of studies out of the three years (L'Ecuyer, 2004), and a technical component that includes both a strong practical and a strong theoretical aspect. The university

programs have a CEGEP DEC prerequisite (for Quebec students only) and three or four years of study focusing on the theoretical rather than the practical aspect of the field.

2. PROBLEM STATEMENT

The problem arises when students chose to follow a college technology program rather than a vocational program and yet are not completing their general education component as scheduled within the program grid, more specifically, they are not completing their required four English (Curtis, 2003; Vanier College General Studies, 2003) and three Humanities (Vanier College General Studies, 2003) courses within the three year program grids.

The “perception” that general education courses are a “stumbling block” or “obstacle” to the success and graduation of students enrolled in college programs leading to a DEC is not new. This issue was originally investigated by the MEQ (Quebec Ministry of Education, now MELS: Ministry of Education, Leisure and Sports) (*Commission d'évaluation de l'enseignement collégial*, 2001; Saint-Pierre, 1997; *Conseil supérieur de l'éducation*, 1997) and was refuted, although the Commission did admit that many students are in the situation where they have to extend the duration of their studies because “they have accumulated failures in general education courses” (*Commission d'évaluation de l'enseignement collégial*, 2001, p. 67). The report published by the Commission did not state whether these same students did, or did not also have program specific courses to complete or if it was only the General Education courses that remained, although the implication is that the extension of their studies is a result of the students not completing their general education courses only.

3. CHANGING DEMOGRAPHICS

In the ten years since the original investigation, a number of changes have occurred within the college system; in particular, changing demographics have had a profound effect on the number of students studying in a language (L2) other than their primary home language (L1). At Vanier College this means that the College has gone from a situation where the majority of entering students come from a relatively small pool of English feeder high schools to one where the majority of entering students come from either French schools or from “other” backgrounds (Curtis, 2002). As a result, over the past ten plus years, the College has gone from having 75% of entering students being placed in the standard ‘Introduction to College English Literature’ course, and 25% being placed in one of the remedial or ESL courses to an opposite situation where 25% of the entering students are placed in the standard Introduction to College English course, and 75% are placed in one of the remedial or ESL courses (Curtis, 2002).

A preliminary questionnaire type survey, conducted in the Spring of 2004 (Robinson, 2004), indicated that this change is readily apparent in the Vanier College Industrial Electronics Program where the majority (58.2%), of the 79 students surveyed were either first or second-generation immigrants who did not use English as a primary language at home, or who were French speaking Quebecers. Consequently, many of these students (50.7%) either had completed their secondary education in their mother tongue before coming to Canada or had completed it in the French school system, either by choice or due to the obligations found in Bill 101, a provincial law that requires all school age immigrants, and the children of Canadian parents who did not have the majority of their primary education in English, with few exceptions, to register in the French school system until they have completed high school or reached the age of 16.

Because of time constraints and ethical issues, the preliminary survey (Robinson, 2004) did not request data on students' marks but only examined the relationship between language issues and completion rates of English and Humanities courses (as indicated by the students on the survey). Although the results of the preliminary survey were inconclusive, indications were that with further study and a larger sample size, the association between the students' background, their primary home language and secondary language of instruction and the students' completion rates for English and Humanities courses might be found to be significant.

The intent of this research was to further investigate and determine whether a definite significant measure of association existed between the successful, timely completion of the English and Humanities courses and a number of factors: principally cultural background, primary home language and secondary school language of instruction, but also the student's initial English placement as a result of the Vanier College English Placement Test and their high school averages.

Because of the differences between the 'hard' and 'soft' technologies, including student population (more specifically gender ratios), writing requirements and types of hands-on versus observational or computer related laboratory activities, the research was limited to the hard technologies of Industrial Electronics, Computer Science, Computer and Digital Systems and Building Systems Engineering, technologies where students work hands-on with hardware and/or computers.

It is hopeful that a clearer insight into the source of the problem will lead to a better understanding of why the students are making the choice to defer, drop or delay taking their required English and Humanities courses, or are failing these courses. It is also hoped that with this awareness, new collaborative approaches for dealing with the problem, on the part of all Departments concerned, Technology and General Studies, may be developed. This will also answer to the Commission's recommendation that Colleges "pursue their efforts to stress collaboration between

the general and the specific education components of programs of studies”
(*Commission d'évaluation de l'enseignement collégial*, 2001, p. 71).

CHAPTER TWO

LITERATURE REVIEW

Diversification of student populations is now becoming more common worldwide. Consequently, there has been an increase in the research on the effect of cultural background and language proficiency on academic achievement. The bulk of the available English research on post-secondary students is taking place in the United States, Australia and South Africa, although because of the increased mobility of populations, research in this area is becoming more prevalent worldwide. The indications, from both current and past research, are that the majority of students that are not being educated in their native culture and/or language experience lower academic achievement than their native English speaking peers (Fligstein and Fernandez, 1985; Fernandez and Nielsen, 1986; Lutz, 2004; Nekby, Rodin and Özcan, 2007; A. Portes and MacLeod, 1999; P. R. Portes, 1999; Ready, 1991; Warren (1996) as cited in Rosigno, Ainsworth-Darnell and Vélez, 2001).

In order to have a clear understanding of the previous research in this area a study of the literature available on L2 language proficiency in vocabulary, reading and writing abilities, and cultural adaptation and the relationship of these factors to academic achievement was conducted.

1. LANGUAGE

There are different groups of L1-Not-English students in College: students who speak a non-English primary language at home, and immigrated here after they had completed all of their primary and secondary education in their primary home

language, and are entering college with no English education background; students who speak a non-English primary language at home, began their education in their primary language, and completed their education in the English system in Quebec; students who speak a non-English primary language at home, began their education in their primary language, and completed their education in the French system in Quebec; students who speak a non-English primary language at home, and either immigrated here very young or were born here, and completed all of their education in the English system in Quebec; students who speak a non-English primary language at home, and either immigrated here very young or were born here, and completed all of their education in the French system in Quebec; or students who speak a non-English primary language at home, and although they were not educated here, received part or all of their education in English outside of Quebec.

Some students that fall into the groups that did graduate from English secondary school in Quebec may also be classified as Generation 1.5 students. Generation 1.5 students are students that received the majority of their education in English, have strong native-English like speaking skills, may have limited proficiency in their primary home language, especially with regards to reading and writing, and often have weak academic English reading and writing skills (Goldschmidt and Miller, 2005; Singhal, 2004; Stoicovy and Quezada, 2004). Generation 1.5 students, although they may speak English similar to a first language English student, will have similar problems in their general education, specifically language oriented courses as other L1-Not-English students and according to Goldschmidt and Miller (2005) will often drop their general education courses by the middle of their first semester in college because they are overwhelmed by the course reading and writing requirements and are unable to meet them.

1.1 Vocabulary

L1-Not-English students speak very little English at home and tend to read less in English than L1-English students. Since the majority of vocabulary learning is through incidental word learning opportunities, such as everyday reading and conversational experiences (Baker, Simmons and Kameenui, 1995), as a result of this lower exposure to English, these students tend to have a poorer vocabulary and be slower readers than L1-English students (Pretorius, 2000). According to Abrams and Ferguson, (2004), as a result, many L2-English students need in-depth vocabulary instructions at all levels of language learning.

It is also believed (Biber (1995), and Selinker and Douglas (1989) as cited in Adamson, 2005; Cummins (1997) as cited in Escamilla, and Grassi, 2000) that there are two forms of L2 language developed by the L2 learner: Basic Interpersonal Communication Skills (BICS), the first type of language a learner acquires, the every day discourse that allows him or her to communicate effectively with others in the L2, and Cognitive Academic Language Proficiency (CALP), which allows a student to read and understand textbooks, and communication within the academic discourse, including dialogue and debate. Many college students with advanced BICS converse fluently in the L2-English and are familiar with spoken English idiomatic expressions and slang. This may lead to problems in school for these students. Because they can speak L2-English comfortably, it may be assumed by their teachers that they must also be proficient in reading and writing in English (Freeman, and Freeman, 2000), which is often not the case.

Eiselen (2003), in her research at Rand Afrikaans University (RAU), on the effects of language proficiency (comprehension and vocabulary) of first year students on academic performance, found that second language Afrikaans or English speakers were more likely to have a language proficiency of 'average' to 'poor'. Furthermore, using multiple regression Eiselen (2003) found that for Arts students, language

proficiency, in particular ‘vocabulary’, directly contributed to the prediction of first term academic achievement, but in the case of both Commerce and Science students, language proficiency was not a predictor. Eiselen (2003) did, however, specifically point out that the results of language proficiency for Commerce and Science students may not have as direct an effect upon their academic achievement due to the fact that placement programs at RAU are based upon previous academic achievement which often includes Standardised Tests. The results of their Standardised Tests themselves could already have been influenced by the student’s language proficiency.

In a classroom situation, average to poor language proficient L2-English students often face extra challenges in their courses. Along with the specialised vocabularies that they may be required to learn in the subject matter of a course (Baker *et al*, 1995), these students are also held responsible for what we consider to be “common knowledge” (Hirsch (1983) as cited in Wiener, 1985; Bernier, 1994) or cultural load (Miller and Endo, 2003), slang, colloquial expressions and references to cultural settings or culturally specific events which may be outside their cultural or linguistic experience (Chandler (1982) as cited in Wiener, 1985; Collingridge, 2000; Miller and Endo, 2003) that give the words specific meaning. This poor language or cultural load comprehension leads to these students spending more time decoding the vocabulary than getting involved in class discussions or expressing their views on the material being covered. The L2-English students also tend not to ask questions in class for a variety of reasons, including: they are not confident of their ability to express themselves, are shy to expose their inability to speak the language well, and/or believe they will be seen as stupid by others. There is the added difficulty of not being able to find the missing vocabulary in references sources because they either cannot spell the term or expression or because the term or expression does not appear in a general dictionary (Bernier, 1994).

Even if the student is comfortable in speaking L2-English, he or she may not be comfortable with academic discourse, thus unless the student is specifically

instructed in the academic vocabulary of the subject, the L2-English student tends to have difficulty becoming proficient in cognitive academic language and this may lead to failure. This difficulty will apply in the majority of academic areas such as science, mathematics, history, English etc. which all have their own form of academic discourse (Escamilla and Grassi, 2000), context-specific language (Kocakulah, Ustunluoglu, and Kocakulah 2005), or register (Adamson, 2005). Competence in academic discourse is more than understanding the vocabulary or register of a subject, it also includes the abilities to “interpret a text, present an argument, cite evidence and draw conclusions” (Adamson, 2005, p. 156).

The L1-English student usually has learned and practised the early phases of academic discourse in these subjects while in secondary school and continues to build on this background while at college. The L2-English student has often struggled to make it through English high school or had to attend a high school in French in Quebec, and thus not necessarily acquired the English academic language background to build on. Fortunately, in the majority of technology courses, it is assumed that the technical vocabulary and procedures are new to all students in the program and these are taught as part of the courses. Although the L2-English student may still have some difficulty acquiring academic discourse in these technical areas, he or she is at less of a disadvantage than he or she would be in a subject where it is assumed the student is familiar with the vocabulary and procedures. The practical aspect of the technical courses also tends to carry a high percentage of the course marks. These aspects of the program professional courses may in part account for the reason the majority of technology students tend to complete all of their program professional courses successfully by the end of their sixth semester and yet a significant number still have some English and/or Humanities courses to complete.

Research has shown that unless L2-English students have had cognitive and academic development in their first or L1 language, at least through the elementary years, they may tend to do less and less well as they travel through to the upper

grades (Collier, 1995; and Singhal, 2004). If students have a conceptual foundation in their L1 language, they will be able to transfer these knowledge and skills to their work in their L2-English language academics (Cummins (1979), Cummins (1994), Perozzi and Sanchez (1992) as cited in Buxton and Escamilla, 2000; and Cummins (1991) as cited in Valenzuela, 2000). Studies in the U.S. have show that immigrant L2-English speakers with no schooling in their L1 language take 7-10 years or more to reach age and grade-level L1-English speaker norms while immigrant L2-English students who have had 2-3 years of school in their L1 language before arriving normally take 5-7 years to reach L1-English norms (Collier, 1995). The most significant background variable in the ability of immigrant students to reach L1-English norms in school is the amount of formal schooling received in their L1 language prior to starting in English school. This prior learning has given the students a transferable knowledge base for making inferences and predictions about the meaning of what is being presented to them and they have also developed some of the academic strategies and skills required to do well in school (Collier, 1995; Saville-Troike, 1991).

Currently at Vanier College we have a large percentage of the students entering the technologies from other than English high schools and/or who are L1-Not-English, many of these students are either first- or second-generation immigrants. Although the majority of them can converse comfortably in English, since they may have a high level of BICS, many do not have a good command of academic discourse (a low level of CALP), also more recent immigrants, or those that spend much of their time within their cultural community, may also be weak in their “common knowledge” directly related to Canadian and Anglo-Quebec culture. These students may not have yet spent a long enough time in the English school system, or the community to transfer the required academic skills and/or knowledge from either their L1 or from French to English. It is thus not surprising that the Vanier College English department is finding that it is often the case that these students with college English language comprehension and production difficulties are generally the same

students who have other academic problems, including poor class attendance and insufficient completion of required course work to pass the course. These same students will also often exhibit disruptive classroom behaviour (Curtis, 2002). A student that finds the level of the work beyond his/her capability will frequently become frustrated with a course.

1.2 Reading

Current theories consider reading to be a meaning construction process. Students that are comfortable reading in a language will not only gather information from what is explicitly stated, but will also use their background knowledge to deduce or infer meaning from the text. As an example, they can infer the meaning of words or expressions from their usage and make links to previous knowledge to construct new knowledge (Pretorius, 2000). In other words, “Proficient readers use cues from three systems – graphophonics, syntax, and semantics – to make sense of texts” (Freeman & Freeman, 1998, p. 42). The point of reading is to make sense of the text, not the individual words (Freeman & Freeman, 1998). Research has also show that reading skills are transferable from an L1 language to an L2 language. Students’ ability to read in their L1 language is a better predictor of their ability to read in English than is their ability to converse in English. Reading ability is also the most important skill in determining school achievement beyond the third grade (Saville-Troike, 1991).

Many L1-Not-English students tend to have difficulty with course assigned readings. Research has shown that not only do these students tend to read, on average, at about a 30% slower rate than L1-English students, but that reading at too slow a rate impedes efficient comprehension (Anderson, 1999; Pretorius, 2000). Since L1-Not-English students often do not fully understand what they are reading, they tend to fail to go beyond the meaning of the words and/or the sentences themselves to make connections, see relationships, fill in gaps, link the information and in general they

show a lack of ability to use inferential processing when they read in English (Pretorius, 2000). In her research on the relationship between reading ability and academic performance, Pretorius (2000), using one-way ANOVA tests, found there was a highly significant relationship between academic performance and the making of inferences during reading, and in fact, through further statistical analysis found that the results indicated that inferencing ability during reading is a fairly robust predictor of academic performance.

There is also the added problem that slow readers tend to find the reading assignments too time consuming and thus tend to be less persistent in completing their assigned readings resulting in a decrease in their opportunities to learn and to understand the subject content (Pretorius, 2000).

1.3 Writing

Academic writing requires that students put in effort and practice in composing, developing and analysing (Myles, 2002). Not only must students be able to write well, they must also be able to write well in a L2 language. Fortunately if a student is a skilled writer in his or her L1 language, it is transferable to the L2 language provided that the student has attained a certain proficiency level in academic discourse in the L2, but if a student has difficulty writing in his or her L1, he or she may not have the strategies necessary to help him or her in their L2-English writing (Myles, 2002; Singhal, 2004)).

For many L2-English students, the process of producing academic writing is very challenging. Although they may appear to speak and understand English well (BICS) they may not have the required academic vocabulary (CLAP) to produce the course required essays and research papers at the expected academic level appropriate for a college student. This is especially true in courses where the majority of, or all of the mark is based on academic papers and research, such as in many English and

Humanities course. Many students also have the added difficulty of having to worry about plagiarism. Some cultures allow other peoples' works to be used in a manner we would call plagiarism in our College courses. The L2-English students are initially bewildered by the fact that they have to restate what they found well written in their research into their own words, when the original is written in good English by a person well versed in the language (Abrams and Ferguson, 2005).

2. ACCULTURATION

Students moving from high school to college have to become acculturated to the differences between what was expected of them in high school and what is expected of them in college. Students whose background is not Canadian have an additional demand on them, they do not only have to become acculturated to the extra responsibilities and demands placed on them by the next step in their education, but they are also dealing with acculturation to the Quebec and Canadian culture. In some cases they may moreover, be dealing with the differences between the Francophone and the Anglophone Quebec culture if they have, in addition to being from a non-Canadian background, been required to go to French primary and/or secondary school and now choose to go to an English College.

2.1 Introduction

Acculturation, in its original meaning, refers to the cultural and psychological, transitions or changes negotiated within an individual or group of individuals when they come in continuous contact with a new or a different culture. Acculturation requires that the individuals negotiate an identity between the majority culture of their peers in the larger community in which they now live or work and their own home, or ethnic community minority cultural background (Berry, Phinney, Sam and Vedder, 2006; Chae, 2001; Nekby *et al*, 2007). This may include making adjustments or changes between minority and majority culture patterns, customs,

social behaviours, preferences, attitudes, values, habits, economic patterns, religious affiliations and attitudes, thinking patterns, political life and self-identity, as well as many other changes (Berry *et al*, 2006; Chae, 2001; Coelho and Stein (1980) as cited in Nuñez and Gary, 2004; Redfield, Linton and Herskovits (1936) as cited in Nekby *et al*, 2007).

Part of the challenge faced is that the individual has to integrate what may be two completely different worldviews, where within the home and cultural community the individual is expected to speak and act according to those community norms and within the larger community he or she is expected to speak and act within a different community norm and each will have its own impact on the individual (Chae, 2001). The weight that the individual will assign to his or her identification with the majority culture and/or the minority culture can be influenced by many factors including the differences in languages, home and minority community environment, attitudes towards education, religious affiliations, politics, racial identity, prejudices faced, socioeconomic status, urban or rural residency and governmental policies on integration, and other factors (Berry *et al*, 2006; Miranda and Umhoefer (1998) and Thomas (1992) as cited in Nuñez and Gary, 2004).

2.2 Cultural Identity

Acculturation is a process not an event. Acculturation takes place over time and each individual chooses his or her own path. “Acculturation is a complex, personal and individual process of cultural change” (Nuñez and Gary, 2004). For immigrants it may be a continuous process that begins when they arrive in a new country and continues for as long as they live there, although for adult immigrants it may be perceived as being stable after long-term contact with the dominant culture (Nekby *et al*, 2007). On the other hand, for adolescents identity formation is one of the central on going psychological tasks, including cultural and ethnic identity (Erikson (1968), Marcia (1980) and Waterman (1985) as cited in Nekby *et al*, 2007;

Phinney, 1992) and many of the students in the college system are adolescents and are still in the process of questioning and forming their identities, including for first and second generation adolescent immigrants both their ethnic identities and cultural identities. Phinney (1992) found in his research that although for university students there was no statistically significant difference in grades based on the achievement of ethnic identity, for high school students a higher ethnic identity score (less confusion over ethnic identity) could be associated with higher grades (A's and B's as opposed to C's and D's). Many of the students entering College in Quebec would still be in high school in the United States where Phinney (1992) conducted his research.

The most common model of cultural identity classification now used is the two dimensional model developed by Berry (1997) (as cited in Berry *et al*, 2006; Nekby *et al*, 2007) which uses four distinct acculturation identities to classify how an individual simultaneously relates or identifies to his or her minority and the majority culture. The four acculturation identities are: integration, separation, assimilation and marginalisation (Berry *et al*, 2006; Nekby *et al*, 2007). In addition to this, Berry *et al* (2006) developed a second identity classification system that along with examining acculturation attitudes, included parameters such as ethnic and national identity, language use and peer and social contacts as well as family relationships. These four new profiles were labelled national, integration, ethnic and diffuse profiles.

In both classification systems, integrated individuals identify with and have a strong sense of belonging and involvement in both their heritage culture and the majority culture. These individuals tend to be comfortable in the languages and values of both cultures and as well have peer contacts in both cultures (Berry *et al*, 2006; Nekby *et al*, 2007).

Assimilated and the national profile individuals identify strongly with the majority culture and have weak links to their ethnic background culture. These individuals have little to no interest in maintaining ties to their ethnic culture and

would rather become part of the majority culture. On the other side, individuals that belong to the separated and/or ethnic profile do not identify nor have much involvement with the majority culture but identify strongly with their heritage culture, and tend to have high ethnic language proficiency and maintain ethnic peer contacts (Berry *et al*, 2006; Nekby *et al*, 2007).

Although the final categories in both classification systems have similarities they do not have as much in common as the other three. Both the diffused and the marginalised individuals have weak ties to both their ethnic culture and the majority culture and do not identify with either. They do not want to maintain their original culture nor do they want to interact with the majority culture. In addition, diffused individuals tend to have a high proficiency in their ethnic language and a low proficiency in the majority language and low peer contact in both cultural groups (Berry *et al*, 2006; Nekby *et al*, 2007).

2.2.1 *Cultural Identity and Educational Attainment*

When Berry *et al*'s (1997, 2006) classification systems are used, studies have shown that first and second generation integrated immigrants with a bicultural orientation tend to do better in school than those with either an ethnic or national orientation and than those that do not identify with either their minority or the majority culture. This appears to indicate that having strong ties to both the heritage and the dominant culture results in better school performance. Integrated parents also tend to be more involved in their children's schooling, and tend to also encourage their children to learn to read and write in their cultural language as well as in the dominant language, both in the home and through special school programs. This may be in part that the parents of integrated immigrants tend to have higher educations than the other three groups. As a note, integrated male students also tend to complete a higher level of education than the other groups, although integrated women show no difference in levels achieved (Berry *et al*, 2006). These results are also supported by

Lutz (2004) in her study of Hispanic students where biliterate students (students who are both highly proficient in both oral English and Spanish as well as being highly literate in both English and Spanish) had higher high school graduation rates than other groups including the English monolinguals and English dominant students and were also more likely to enter college than the other groups.

The lowest level of educational achievement, was experienced by the marginalised profile (Nekby *et al*, 2007) using the original classification system and the diffused profile in the later classification system (Berry *et al*, 2006), with these classifications being associated with higher probabilities of having not gone beyond the compulsory education level.

There is also a concern where certain cultures and ethnic groups may be associated with either high or low educational achievement (Nekby *et al*, 2007; A. Portes, 1999; P. R. Portes, 1999). When a student attends a school the influence of his or her home and culture identity will have an effect on how well he or she will adapt to the school environment. Because home environment, such as child-rearing approaches, socialisation practices and expectations differ across cultures, the cultural compatibility to a specific educational system may be weaker or stronger depending on the teachers' expectations of their students. As an example, in certain cultures children are taught that they must be obedient and must never question an adult. To do so would be disrespectful. Place the same child in a school situation where the teacher expects the students to be more assertive, more independent, to ask questions when they do not understand and this student's culture has taught him or her that it is considers disrespectful to question an adult, then the student's cultural beliefs will interfere with his or her ability to learn (Weiner, 1985; Chae, 2001). Problems in school may then cause the student to feel more alienated from the majority culture and develop stronger attachments to his or her minority culture which may lead the student to eventually become marginalised or separated and both marginalisation and separation are associated with lower educational attainment (Nekby *et al*, 2007). The

acceptance of immigrant background students within, the adjustment to, and the success in college system will not only have an effect on how students perceive themselves (their identity formation), but on how successful they are in their studies.

2.3 **Culture and a Common Background**

2.3.1 *Tacit Knowledge and Culture*

An important factor in cultural understanding is tacit knowledge. Tacit knowledge is what a person needs to know to fit seamlessly into an environment. It is not explicitly taught and frequently not even verbalised and it is usually procedural rather than declarative (Sternberg, 1998). To a person brought up in a particular culture the tacit knowledge of the culture is obvious to him or her while for an immigrant from another culture these un-stated expectations of understanding or behaviour are often completely hidden. It is this hidden aspect of tacit knowledge makes it difficult to learn and to teach (*Ibid*, 1998).

There are a many aspects to tacit knowledge including, in an education system, knowledge of expected behaviour and procedural knowledge. An example of educational procedural knowledge is test taking. In some cultures taking the time to consider each question carefully before answering is considered a sign of intelligence, in other cultures time is considered more fluid and people are generally taught not to rush and here in North America, where standardised testing is often used, students are taught to answer questions quickly, move on to the next and skip questions to come back to if they don't immediately know the answer. The immigrant that does not place the same value on time when taking a test will in general not do as well with the North American style of testing (Sternberg, 1998). Examples of other important educational considerations include learning expectations (rote memorising or understanding), expected classroom behaviour, and interaction with the teacher (sit quietly and listen to the adult as a sign of respect and don't speak unless specifically

requested to do so or ask questions when you don't understand and volunteer answers when you know them). These differences in expectations are not necessarily obvious to an immigrant coming from another educational system and he or she may be less successful in school as a result.

Another aspect of tacit knowledge is more specifically culturally related and is considered the covert dimension of culture (Hall (1977) as cited in Huang, 1997). This includes the unconscious behaviours and perceptual patterns that are a product of many years of being in an environment, from the daily social learnings including how to talk, how to walk, to what facial expressions to use to express feelings and thoughts (Huang, 1997; Sternberg, 1998). An important aspect of covert culture is communication. In the majority of North American cultures it is the verbal aspect of communication that is critical and non-verbal cues are often ignored or missed. In many other cultures it is the nonverbal communication that is more important than what is actually said. It is the facial expressions and mannerisms that carry the true message, not what is actually verbalised (Huang, 1997; Sternberg, 1998). This can lead to misunderstandings especially if a student expects a teacher to be able to understand what they are not saying in order not to give offence, and the teacher is hearing only the verbal agreement that the student understand the material or question, and not reading the non-verbal cues that the student is only agreeing to be polite.

2.3.2 *Language and Culture*

The understanding of the words of a language does not always translate to the understanding of the meaning of what is written or stated. It is important to remember that the acquisition of language is also related to cultural accommodation (Chandler (1982) as cited in Wiener, 1985) that "learning another language involves learning another way of thinking and viewing the world because it includes learning attitudes and behaviours inherent in the culture of the new language" (Jean-van Hell, 2000, p. 34). The background of the student thus has a bearing when it comes to him

or her understanding what he or she hears and reads. This is especially true in higher education where the ability of students to perform does not only depend on their language ability but also “their understanding of the education culture in which they are undertaking their studies” (Ingram, 2005). Acculturation into a literate culture includes an understanding of what a “‘common reader’ of a newspaper” would be expected to know and understand (Hirsch (1983) as cited in Wiener, 1985 p. 100). We can thus say that language is not neutral but is culturally subjective reflecting the worldview of the community where it is spoken (Chandler (1982) as cited in Wiener, 1985; King’ei, K, 2000). A student can appear to be comfortable with the language but if he or she is not as familiar with the culture as his or her classmates, he or she may run into difficulty in higher education courses where the assumption of a common background is made.

3. SUMMARY OF RELEVANCE

As stated previously, it has been noted that the majority of Technology students that do not complete their DEC in the allotted six semesters, have completed all their technical courses, but not all their English and/or Humanities courses. Technology courses, specifically hard technology courses, have a more practical/applied content and less reading and writing than either English or Humanities courses. The students are also not expected to enter their technology courses already familiar with the vocabulary and procedures. The first premise of this research is that one of the main sources of the problems these students encounter in their English and Humanities courses is the language proficiency required (vocabulary, reading and writing) to successfully complete these courses, and that thus, immigrant, L1-French and L1-Other students, will be the students that have the most difficulty successfully completing all required English and Humanities courses during their program timeframe of three years.

The literature available on this subject appears to support the premise that language proficiency has an effect on academic achievement. Of noteworthy interest is the research Eiselen (2003) did on Arts, Commerce and Science students at RAU, where for Arts students, language proficiency was a strong predictor of academic achievement while for Commerce and Science students there was no measurable correlation and Goldschmidt's and Miller's (2005) research that saw generation 1.5 students dropping their general education courses (psychology, history, sociology, etc. in this case) part way through the first semester because they were overwhelmed by the reading and writing requirements of these courses. This correlates with what is seen in the Technology Programs, where the majority of technical courses are completed on time and English and Humanities (Arts or general education) courses are not. This has also been noted by the Vanier College General Studies Curriculum Committee, who stated, with reference to technology students in general, that "Students can occasionally leave themselves with so many General Education courses outstanding that they need to return to the college for an entire year of General Studies", in order to complete their DEC (Vanier College General Studies, 2003).

Research has also shown that acculturation may be a factor in the students' success in school. It is not only the students' language skills directly but also their knowledge of the Canadian, Quebec, Anglo culture and background that may interfere with their learning, more specifically in courses where assumptions of cultural knowledge, including tacit cultural knowledge may be made. This is more likely to occur in English and Humanities courses where the students are expected to be able to understand, do reading assignments, have discussion and make presentations on material that is related to classical, historical and current Canadian, Quebec and English literature and historical and current local, provincial and national events that they have no previous knowledge of and/or no connection to, than in technology courses.

Another culturally related factor that may interfere with the students learning is their identity formation. Students who are struggling with who they are and who have not achieve an identity or who are rejecting part of their identity, whether it be their heritage identity or the identity of the majority culture in the community where they now live tend to do less well in school than do students who identify in some manner with both their heritage and the majority culture. Integrated and/or biliterate students do better in school than any of the other identity groups.

4. RESEARCH QUESTIONS

Based on the results of the literature review and observations made at Vanier College, the following research questions were developed and will be addressed in this research project:

1. Does a Vanier College hard technology student's primary home language have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?
2. Does a Vanier College hard technology L1-Not-English student perceive him- or herself to be less fluent in speaking, reading and writing in English than a L1-English student?
3. Does a Vanier College hard technology student's high school language of instruction have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?
4. Does a Vanier College hard technology student who attended a high school where the language of instruction was not English perceive him- or herself to be less fluent in speaking, reading and writing in

English than does a student who attended a high school where the language of instruction was English?

5. Does a Vanier College hard technology student's cultural background (i.e. the student's place of birth and/or the student's parents' place of birth) have an impact on his or her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?
6. Does a Vanier College hard technology student whose cultural background is not Canadian perceive him- or herself to be less fluent in speaking, reading and writing in English than a student whose cultural background is Canadian?
7. Does a Vanier College hard technology student's high school average have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?
8. Does a Vanier College hard technology student's English placement level have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Based on the literature research, observations of Vanier College technology students and the above research questions the following hypotheses were developed:

4.1 **Hypotheses for Research Question 1**

For research question 1: Does a Vanier College hard technology student's primary home language have an impact on his/her ability to succeed in the required

English and/or Humanities courses within the three year technology program timeframe?

H1a: Vanier College L1-English hard technology students will, on average, have completed more of the required four English courses than L1-Not-English students by the end of their fifth semester.

H1b: Vanier College L1-English hard technology students will, on average, have failed fewer English courses than L1-Not-English students by the end of their fifth semester.

H1c: A higher percentage of Vanier College L1-English hard technology students will have completed all of their required English courses by the end of the fifth semester than L1-Not-English students.

H1d: Vanier College L1-English hard technology students will, on average, have completed more of the required three Humanities courses than L1-Not-English students by the end of their fifth semester.

H1e: Vanier College L1-English hard technology students will, on average, have failed fewer Humanities courses than L1-Not-English students by the end of their fifth semester.

H1f: A higher percentage of Vanier College L1-English hard technology students will have completed all of their required Humanities courses by the end of the fifth semester than L1-Not-English students.

H1g: Vanier College L1-English hard technology students will, on average, have fewer combined English and Humanities courses left

to complete after they have completed all their program professional courses than L1-Not-English students.

4.2 Hypotheses for Research Question 2

For research question 2: Does a Vanier College hard technology L1-Not-English student perceive him- or herself to be less fluent in speaking, reading and writing in English than a L1-English student?

H2a: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to speak English than will L1-English students.

H2b: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to read English than will L1-English students.

H2c: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to write English than will L1-English students.

4.3 Hypotheses for Research Question 3

For research question 3: Does a Vanier College hard technology student's high school language of instruction have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

H3a: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required four English courses

- by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English.
- H3b: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer English courses by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English.
- H3c: A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required English courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.
- H3d: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required three Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.
- H3e: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.
- H3f: A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required Humanities

courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.

H3g: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than those students who attended a high school where the language of instruction was Not-English.

4.4 Hypotheses for Research Question 4

For research question 4: Does a Vanier College hard technology student who attended a high school where the language of instruction was not English perceive him- or herself to be less fluent in speaking, reading and writing in English?

H4a: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to speak English than those students who attended a high school where the language of instruction was English.

H4b: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to read English than those students who attended a high school where the language of instruction was English.

H4c: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on

- average, rank themselves as lower in their ability to write English than those students who attended a high school where the language of instruction was English.

4.5 **Hypotheses for Research Question 5**

For research question 5: Does a Vanier College hard technology student's cultural background (i.e. the student's place of birth and/or the student's parents' place of birth) have an impact on his or her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

H5a: Vanier College hard technology students who were born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students who were not born in Canada.

H5b: Vanier College hard technology students who were born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students who were not born in Canada.

H5c: A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students who were not born in Canada.

H5d: Vanier College hard technology students who were born in Canada will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

H5e: Vanier College hard technology students who were born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

H5f: A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

H5g: Vanier College hard technology students who were born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than will those students who were not born in Canada.

H5h: Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5i: Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5j: A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5k: Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5l: Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5m: A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

H5n: Vanier College hard technology students whose parents were both born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than will those students whose parents were not both born in Canada.

4.6 **Hypotheses for Research Question 6**

For research question 6: Does a Vanier College hard technology student whose cultural background is not Canadian perceive him- or herself to be less fluent in speaking, reading and writing in English than a student whose cultural background is Canadian?

- H6a: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to speak English than those students who were born in Canada.
- H6b: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to read English than those students who were born in Canada.
- H6c: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to write English than those students who were born in Canada.
- H6d: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to speak English than those students whose parents were both born in Canada.
- H6e: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to read English than those students whose parents were both born in Canada.
- H6f: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to write English than those students whose parents were both born in Canada.

4.7 Hypotheses for Research Question 7

For research question 7: Does a Vanier College hard technology student's high school average have an impact on his/her ability to succeed in the required

English and/or Humanities courses within the three year technology program timeframe?

H7a: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

H7b: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

H7c: A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required English courses by the end of the fifth semester than will those students that are in a lower high school average bracket.

H7d: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

H7e: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

H7f: A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are in a lower high school average bracket.

H7g: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses than will those students that are in a lower high school average bracket.

4.8 Hypotheses for Research Question 8

For research question 8: Does a Vanier College hard technology student's English course placement level have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

H8a: Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students that are placed in lower level English courses.

H8b: Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are placed in lower level English courses.

H8c: A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed

all of their required English courses by the end of the fifth semester than will those students that are placed in lower level English courses.

H8d: Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses.

H8e: Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses.

H8f: A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are placed in lower level English courses.

H8g: Vanier College hard technology students who are placed in a higher level English course, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses than will those students that are placed in lower level English courses.

CHAPTER THREE

METHODOLOGY

The intent of this research was to discover if, as the existing literature supports, there are any significant measures of association between primary home language, high school language of instruction, and/or cultural background and the ability of students to complete their English and Humanities courses within the prescribed three years of the Quebec college level technology programs, specifically the four Vanier College hard technology programs of Building Systems Engineering, Computer and Digital Systems, Computer Science, and Industrial Electronics. In order to do this, it was necessary to gather data on the students' linguistic and cultural background, perceived difficulty in completing the requirements of these courses, actual completion rates and background (high school average & English placement) and current academic standings. The students in the sample were able to supply the required personal information, and attitudes through a survey and the College provided the data required to validate pass/fail rates of these courses and also supply information on the students' background and current academic standings. This research data, provided by the students and the College, was analysed using SPSS quantitative methods.

1. THE STUDENTS

1.1 The Sample

The sample was a convenience sample. All students currently registered in a selected fifth semester (Fall 2006) technology course in each of the four Vanier

College hard technology programs (Building Systems Engineering, Computer and Digital Systems, Computer Science and Industrial Electronics) and present in their class on the day of the survey, along with a group of sixth semester Industrial Electronics Technology Program students (Winter 2006) were given the opportunity to participate in the research project. A total 60 students met the research requirements, 35 from the fifth semester classes and 25 from the sixth semester class.

The required data on the students was collected from two different sources: from the students themselves and from the College. Permission was requested from and given by one teacher in each of the programs to survey one representative fifth semester class. The author of the research went to each of the classes at the prescribed time, explained the basics of the research, the consent forms, and that confidentiality would be maintained with no names or identifying information attached to any data used in the research report and/or made public. It was made clear to the students that participation in the research was voluntary and students not wishing to participate could either refuse the survey or not sign one of the consent forms that comprised the cover page of the survey. The survey was then distributed to the class and the students were reminded to first complete the two consent forms if they wished to participate in the research and then complete the survey itself. Surveys were collected from each student as soon as the student indicated he or she was finished. The sixth semester class was a class that the author was teaching at the time and the same introduction and survey format was followed for them as for the fifth semester classes.

Although both fifth and sixth semester students were asked to complete the survey, consistency in the data was maintained since the personal data and background academic information were not dependent on semester and only college academic data relevant to the end of the fifth semester was included in the research analysis. Thus the semester the student was registered in would not have any bearing on the outcome of the analysis, provided he or she had at least attained the fifth semester.

A total sample of 67 students completed the survey, of which, as stated previously, 60 met the research requirements. Students who did not sign both parts of the consent form, who had been in college for more than five years, or who had transferred to the technology programs after completing their English and Humanities requirements while registered in another program were rejected from the sample as were those students who did not supply all the required personal information or who skipped sections of the survey. Of the 60 students that met the research requirements, only three (5%) were female. Because of this low female to male ratio, the data was not examined for gender differences.

1.2 Descriptive Statistics of Sample

Bar charts for the statistics presented below can be found in Appendix B.

The representation by department for the 60 students used in the research was as follows: 34 participants (56.7%) from Industrial Electronics, 12 participants (20%) from Building Systems Engineering, and seven participants (11.7%) from each of Computer and Digital Systems and Computer Science Technologies.

The sample representation by cultural factors, including primary home language, high school language of instruction, country of birth, and parents' country of birth are given in Table 1 and Table 2 below. The information on high school language of instruction is included since the majority of immigrants and children of immigrants are required to go to French school until they have completed high school or are 16 years of age as a result of a Law passed in Quebec. Attending a French high school when your primary home language is not French does not necessarily indicate that you are more comfortable in French than in English. Often students that choose to attend an English college after attending a French high school did not have the option to attend an English high school, have struggled to complete their French requirements in the French high school system and expect to be able to work more

comfortably in English than they did in French. The disadvantage for these students is that they are often weak in reading, writing and producing College level academic work in English.

Table 1
Primary Home Language and High School Language of Instruction

	English	French	Other
Primary Home Language	24 (40%)	7 (11.7%)	29 (48.3%)
High School Language	27 (45%)	26 (43.3%)	7 (11.7%)

Appendix C, page 186 contains a chart of the languages spoken by the participants as indicated in the Language Fluency section of the survey. According to the information provided, the 60 students spoke a total of 34 different languages. A few of the students indicated that they had moved from their country of origin to at least one other country before they arrived in Canada. An example is that participant with code 047 had moved from Sri Lanka to Qatar (and thus had to learn Arabic) before immigrating to Canada. Other students came from countries where they spoke their local language (or dialect) and the common language of the country and still others had parents whose primary language were not the same and thus were exposed to multiple languages growing up.

Table 2
Participants' and Parents' Immigrant Status

	Yes	No
Participant born in Canada	29 (48.3%)	31 (51.7%)
Mother Born in Canada	13 (21.7%)	47 (78.3%)
Father Born in Canada	10 (16.7%)	50 (83.3%)
Both Parents born in Canada	9 (15%)	51 (85%)

It is interesting to note that while only 31 (51.7%) of the participants were born outside of Canada, 51 (85%) have at least one or more parents that was born in a country other than Canada. This clearly indicates that 85% of the students have close

ties to cultures other than Canadian. Examining the countries of origin of the students and/or their parents, not counting Canada, (see Appendix C, page 187) there are 30 countries represented by the group of 60 participants. In a few cases the mother and father come from different countries, thus exposing the participant to multiple cultural backgrounds in the home.

1.3 The Survey

The data was collected from the students using a questionnaire type survey (see Appendix A). The survey was five pages long, including the cover page. Each page was specific to a topic or area of interest to the researcher. The first or cover page included a brief introduction to the purpose of the research, a statement guaranteeing confidentiality and the two consent forms the students were requested to sign. The first consent form requiring a signature stated that the student gave the researcher permission to use the data collected with the attached survey for the purpose of the research. The second consent form (second signature required) gave permission for Vanier College to provide the researcher with the specified MELS academic information on the student, including background and current academic information, for use specifically for this research. The consent forms and survey met the approval of the Vanier College ethics board.

The second page of the survey was used to gather background data and information on the student including the student's college ID number (for use in accessing his or her academic information through the College), gender, program of studies, entrance date to the program, semester(s) in which he or she is taking courses, country of birth, time in Canada, family cultural background (parents' country of birth), language spoken when he or she arrived in Canada (if not born here) and a summary of previous college and secondary school background including language of instruction.

The third page of the survey was used to gather data on English and Humanities courses, included the number of courses taken as intensives, the number of English and Humanities courses the student expects to have left to complete after they have completed all their program professional courses (at the end of the “sixth semester”) and finally ratings, using a five-point Likert scale, on the student’s perception of the level of difficulty of the English and Humanities courses and of working in the English language.

The fourth page of the survey focused specifically on the language(s) used by the student. The student was asked to list all languages he or she could speak, read and write as well as the languages he or she used when listening to or watching media (music and TV). For the languages used when speaking, reading, and writing they were also asked to rate their fluency on a four-point Likert scale, 1 to 4 where 1 was they could understand a bit and 4 was fluent. When language is entered into the statistical analysis program, it is entered as English, French or Other and is ranked using the order in which they were listed by the student.

The final page of the survey requested that the student write a brief paragraph on his or her opinion on why (or why not) English and Humanities courses were considered by the student to be an important part of a technology program. In this case, what the student wrote was not of interest so much as the quality of the writing. A content analysis on the written work that included examining the number of grammar/spelling errors, number of words written, and Flesch Reading Ease against the number of English and/or Humanities courses taken, failed and/or successfully passed was done. Of interest was to see if there was any measure of association between these factors. A preliminary survey of this type given to twenty-six Industrial Electronics students in the Fall of 2005 indicated that there are possibilities of significant measures of association between the indicated factors, but the number of completed surveys (26) was too low to achieve significance. A decision was made to take this opportunity to collect this data from a larger sample.

2. THE COLLEGE

The College was asked to provide five sources of academic information on the student. These were the high school averages, English Placement results, program planners, transcripts of marks and English Exit Exam results. Unfortunately not all the information was available, nor was it necessarily available in a usable format.

2.1 Program Planners

The program planners (see sample Appendix D, page 189) are used by the College and the student to keep track of the required program courses the student has completed and the courses he or she has left to complete. Its intent is to make it easier for students to select what course to take each semester and for the academic advisors to help students make the appropriate choices, especially when students are out of phase with their program grids. For the purpose of this research the program planner was the simplest way to verify what English and Humanities course the student had completed and how many were left at the end of the fifth semester and to verify if the student was on track with their program professional courses. Hardcopies of program planners were provided to the researcher by the College registrar's office.

2.2 Transcripts

The College registrar's office also provided the researcher with hardcopies of the transcripts (sample Appendix D, page 190) for each of the students. Transcripts were necessary since program planners only list the courses the student has completed with the passing mark. They do not list failures or the number of times a particular course has been failed. This information was found using the transcripts as every course taken, along with the mark earned is listed, including failures. Each transcript had to be reviewed individually to find out if the student had failed any English and/or Humanities courses and if so which ones and how many times each course was taken before a pass was achieved. Unfortunately, if a student dropped a

course before the drop-date, the course was not registered on the transcript. There is no way to access this information.

2.3 High School Averages

Finally the registrar's office was asked to provide the students' high school averages. This information was not available in a useable format since weighted high school averages were calculated differently for each of the programs depending on the prerequisites. The registrar's office was able to provide the high school transcripts (sample Appendix D, page 191) for all students that had completed their high school in Quebec. High school averages for these students was calculated by the researcher based on the academic courses taken. Courses such as Art, Physical Education, Music, Ecumenical and Job Search Skills were not included in the average. Although high school averages have always been considered a strong predictor of students' success in college, it was not clear whether it could be used as a predictor of success in only a limited aspect of a Program, namely the English and Humanities courses. It was important to either eliminate it as a factor or discover if the high school average in combination with the other factors being examined could be used to help identify the at-risk students.

2.4 English Placement Test

Vanier College is one of the few Quebec Anglophone colleges that requires all new college students to take an English Placement Test, regardless of whether they completed their high school in English, French or another language. MELS requires that all students registered in a Quebec college take and pass an Exit Exam in the primary language of instruction of the college: English Exit Exams at Anglophone colleges and French Exit Exams at Francophone colleges (CEGEPs). Even though a student has completed all of the required program courses, a student will not be granted his or her DEC until he or she has passed the prescribed language Exit Exam.

English Placement Tests and English Exit Exams at Vanier College are the responsibility of The Learning Centre (TLC). Although the Centre was unable to provide the researcher with an exact mark or score for the placement tests, the Centre was able to provide the researcher with the English placement level (course number) for all students except those that transferred to Vanier from another college. In this case, if the student did take a placement exam, the results were not available. The intent was to take the student's score on the English placement test and examine it in terms of his or her primary home language, secondary school language of instruction, cultural background and more importantly, successful timely completion of English and Humanities courses. It would have been of interest to see if this score alone, or if this score in combination with other factors identified in the research could be used to help identify at-risk students. Instead the analysis was done using the placement level.

2.5 English Exit Exam

Unfortunately The Learning Centre does not keep track of how many times a student attempts the English Exit Exam before he or she passes the exam. The only information readily available was whether the student had yet earned a passing mark in the exam. To find out if the student had previously written and failed the exam the researcher would have had to review all English Exit Exams written for the last few semesters, looking for each of the students that completed the survey. This was not viable so the English Exit Test results were not used for the research.

3. CONFIDENTIALITY

Confidentiality was maintained with respect to all data gathered. Although the students were asked to provide their ID numbers on the survey, this information was requested for the purpose of matching the students' data from the various sources. This ID number does appear anywhere in the report or in the SPSS files, and will not appear in any material that is made public. Each student's set of data was assigned a

separate code that had no relationship to the student's ID number and this code is what was used to identify the specific student's data in the research process and report.

All data gathered through the surveys and supplied by the College will be kept for up to five years and if at that time it is no longer of any use, it will be disposed of in a safe and secure manner.

4. SUMMARY OF METHODOLOGY

The data was gathered from two sources: the individual student using a questionnaire type survey for personal information and attitudes and Vanier College for academic information.

The participating students were taken from a convenience sample. All the students fitting the profile were asked to participate in the research project by completing the required consent forms and survey. Information and data provided on the survey was used to identify the students' family and cultural background as well as provide the researcher with an indication of the students' perception of the ease or difficulty of completing the required work for the English and Humanities courses. A sample of the students writing in English was also gathered using the survey. The statistical data provided was analysed using SPSS.

Academic information on the students was provided by the college. From this information, English placement, English and Humanities pass fail rates, English and Humanities completion rates and high school averages were calculated. This information was also analysed using SPSS along with the information provided in the survey for statistically significant associations.

CHAPTER FOUR

ANALYSES OF DATA AND RESULTS

Preliminary data analyses were done using descriptive statistics and bar charts to search for obvious differences between the groups (see samples in Appendix B & E). Following this review of the data, the hypotheses were examined using SPSS and the appropriate statistical analyses tests including the Kruskal-Wallis test, Independent-Sample t-test and the One-Way ANOVA test. When the SPSS independent samples t-test is used to check for differences between means, SPSS also tests for the variance for the two distributions to see if they are equal or different. This is done using the Levene's Test for Equality of Variance. With the Levene's test, if the significance (or p value) is greater than 0.05 (5%), the two variances are not different and the top row (Equal variances assumed) of the independent-samples t-test table is used. If the Levene's test results in a significant difference of 0.05 or less, the second or bottom row (Equal variances not assumed) of the independent-samples t-test table is used.

1. INDEPENDENT VARIABLES

A summary of the descriptive statistics of the independent variables is presented in the table below. More details on each of the variables, including the codes used can be found in Appendix E on pages 193 and 194. Note that English Entry level is used both as an independent and as a dependent variable, depending on the analyses being done. As was previously mentioned, high school averages and English Entry levels were not available for all students.

Table 3
Descriptive Statistics of Independent Variables

	N	Minimum	Maximum	Mode
Primary home language (English, French, Other)	60	1 = English	3 = Other	3 = Other (48.3%)
Primary home language	60	1 = English	2 = Not English	2 = Not English (60%)
Born in Canada	60	0 = No	1 = Yes	0 = No (51.7%)
Both parents born in Canada	60	0 = No	1 = Yes	0 = No (85%)
H.S. language of instruction (English, French, Other)	60	1 = English	3 = Other	1 = English (45%)
H.S. language of instruction	60	1 = English	2 = Not English	2 = Not English (55%)
High school average (1 to 8)	49	2 = (64.5 to 69.5)	6 = (84.5 to 89.5)	3 = (69.5 to 74.5) (38.3%)
English entry level	52	0 = (lowest)	3 = (highest)	2 (59.6%)

2. DEPENDENT VARIABLES

A summary of the descriptive statistics of the dependent variables is presented in the table below. More detailed tables on each of the variables, including the codes used, can be found on pages 195 to 197 in Appendix E.

Table 4
Descriptive Statistics of Dependent Variables

	N	Minimum	Maximum	Mode	Mean
Number of English completed	60	1	4		2.78
Number of English failed	60	0	4		0.82
Number of Humanities completed	60	0	3		2.08
Number of Humanities failed	60	0	3		0.38
Combined English & Humanities left after 5 th semester	60	0	6		2.05
Humanities left after 5 th semester (0 & 1)	60	0 = no	1 = yes	1 (53.3 %)	
English left after 5 th semester (0 & 1)	60	0 = no	1 = yes	1 (65.0%)	
English entry level (0 to 3)	52	0 = (lowest)	3 = (highest)	2 (59.6%)	
Level of English spoken (1 to 4)	60	2	4 = (fluent)	4 (65.0%)	
Level of English read (1 to 4)	60	2	4 = (fluent)	4 (61.7%)	
Level of English written (1 to 4)	60	2	4 = (fluent)	4 (50%)	

As mentioned above, English Entry Level is also included in this table as it is used both as an independent and a dependent variable. It is important to note that all of the dependent variables, with the exception of the English Entry Level, were supplied by the students themselves and all students answered all related questions.

3. SUMMARY OF HYPOTHESIS TESTS RESULTS

A summary table of the results of the analyses of all the research questions' hypotheses can be found in Appendix N. Note that wherever significance was found ($p \leq 0.050$), it is indicated using highlighting.

3.1 Research Question 1

Research Question 1: Does a Vanier College hard technology student's primary home language have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Research Question 1 led to the development of seven hypotheses related to Primary Home Language and the ability of the students to succeed in their English and/or Humanities courses. Although the original data separated the primary home language into a classification system that consisted of three groups, English, French and Other, where the Other category included any language other than English or French, for testing purposes a different two language groups classification system was used where the French and Other language groups were combined into a new group called Not-English. With these distinct two primary home language groups, testing for significant differences between the means for each of the hypothesis for Research Question 1 could be, and was done using the SPSS independent-samples t-tests. Bar charts giving the number and percentages of students that fell into each of

the categories for both the original and new language classification systems are presented below.

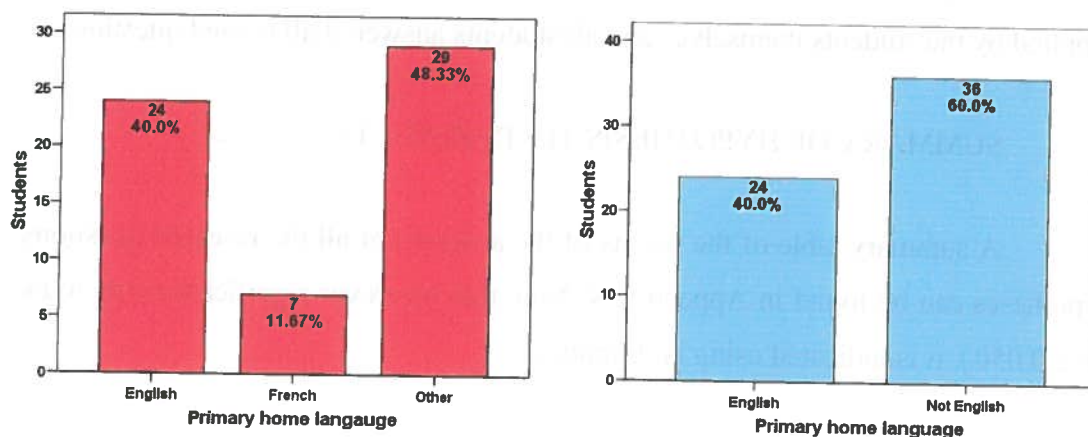


Figure 1: The Two Primary Home Language Groupings

As can be seen, English is the primary home language of the minority of the students in this study. When at home, the majority of the students speak a language that falls into the “Other” category of the original language classification system, or the Not-English category in the second language classification system.

3.1.1 Hypothesis H1a

For hypothesis H1a: Vanier College L1-English hard technology students will, on average, have completed more of the required four English courses than L1-Not-English students by the end of their fifth semester, the result using the English, Not-English primary home language categories for the independent variable, the mean (average) number of English courses completed by each language group as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 0.369 \Rightarrow t = -0.432$ & $p = 0.667$) between the mean number of English courses completed (English: $\bar{x} = 2.71$ & Not-English: $\bar{x} = 2.83$) by the students in each of the two primary language groups. Hypothesis H1a has to be rejected and the null hypothesis accepted: There is no difference between the mean

number of English courses completed by Vanier College hard technology L1-English and L1-Not English students by the end of their fifth semester.

When the data is examined it can be seen that for this particular sample the L1-Not-English students, on average, have completed slightly more English courses by the end of the fifth semester than have the L1-English students, although this difference in means is not significant, but is due to chance. The bar charts for the mean number of English courses completed by the students in both of the primary home language classification systems and the SPSS independent-samples t-test tables relating to H1a can be found in on Appendix F, page 200.

3.1.2 *Hypothesis H1b*

For hypothesis H1b: Vanier College L1-English hard technology students will, on average, have failed fewer English courses than L1-Not-English students by the end of their fifth semester, the result using the English, Not-English primary home language categories for the independent variable, the mean number of English courses failed for the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 0.228 \Rightarrow t = 0.090$ & $p = 0.928$) between the mean number of English courses failed (English: $\bar{x} = 0.83$ & Not-English: $\bar{x} = 0.81$) by the students in each of the two primary home language categories. Hypothesis H1b has to be rejected and the null hypothesis accepted: There is no difference between the mean number of English courses failed by Vanier College hard technology L1-English and L1-Not-English students by the end of the fifth semester.

When the data is examined it can be seen that for this sample the L1-English students have actually faired slightly worst than the L1-Not-English students and have failed, on average, slightly more English courses than the L1-Not-English students, although the difference in means is due to chance. Closer examination of the

data, indicates that more specifically, with this sample, it is the French primary home language students that have, on average, failed the most English courses ($\bar{x} = 1.00$), followed by English primary home language students ($\bar{x} = 0.83$) and finally Other primary home language students ($\bar{x} = 0.76$), although these differences in means, as stated above, are not significant and are due to chance. The bar charts for the mean number of English courses failed by the students in both primary home language classification systems and the SPSS independent-samples t-test tables relating to H1b can be found on Appendix F, page 201.

3.1.3 Hypothesis H1c

For hypothesis H1c: A higher percentage of Vanier College L1-English hard technology students will have completed all of their required English courses by the end of the fifth semester than L1-Not-English students, the independent variable is the primary home language (English, Not-English) and the dependent variable, the mean of the data, represents the percentage of the students in each primary home language group that have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test examines for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two primary home language categories that have English courses remaining at the end of their fifth semester. The result was there is no significant difference ($f = 0.195 \Rightarrow t = 0.217$ & $p = 0.829$) between the percentage of students in each primary language group (English: $\bar{x} = 1 - 0.667 = 0.333$ (33.3%) & Not-English: $\bar{x} = 1 - 0.639 = 0.361$ (36.1%)) that have completed all of their English courses by the end of the fifth semester. Hypothesis H1c is rejected and the null hypothesis has to be accepted: There is no difference between the percentage of Vanier College hard

technology L1-English and L1-Not-English students that have completed all of their English courses by the end of the fifth semester.

Examining the data will show that for this sample, a slightly higher percentage of L1-English students have completed all of their English courses than L1-Not-English students, although this slight difference in means is not significant and is due to chance. The bar charts for the percentage of students with English courses left for both primary home language classification systems and the SPSS independent-samples t-test tables relating to H1c can be found in Appendix F, page 202.

3.1.4 *Hypothesis H1d*

For hypothesis H1d: Vanier College L1-English hard technology students will, on average, have completed more of the required three Humanities courses than L1-Not-English students by the end of their fifth semester, the result using the English, Not-English primary home language categories as the independent variable, the mean number of Humanities courses completed as the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 3.793 \Rightarrow t = -1.608 \text{ \& } p = 0.113$) between the mean number of Humanities courses completed (English: $\bar{x} = 1.83$ & Not-English: $\bar{x} = 2.25$) by the students in each of the two primary home language groups. Hypothesis H1d has to be rejected and the null hypothesis accepted: There is no difference between the mean number of Humanities courses completed by Vanier College hard technology L1-English and L1-Not-English students by the end of the fifth semester.

When the data is examined it can be seen that with this sample, on average, the L1-Not-English students have completed more Humanities courses than the L1-English students by the end of the fifth semester, although this difference in means is not significant and is due only to chance. The bar charts for the mean number of

Humanities courses completed by the students in both primary home language classification systems and the SPSS independent-samples t-test tables relating to H1d can be found in Appendix F, page 203.

3.1.5 Hypothesis H1e

For hypothesis H1e: Vanier College L1-English hard technology students will, on average, have failed fewer Humanities courses than L1-Not-English students by the end of their fifth semester, the result found using the English, Not-English primary home language categories as the independent variable, the average number of Humanities courses failed as the dependent variable, and the SPSS independent-samples t-test was there is there is no significant difference ($f = 7.489 \Rightarrow t = 1.266$ & $p = 0.215$) between the mean number of Humanities courses failed (English: $\bar{x} = 0.54$ & Not-English: $\bar{x} = 0.28$) by the students in each of the two primary home language groups. Hypothesis H1e has to be rejected and the null hypothesis accepted: There is no difference between the mean number of Humanities courses failed by Vanier College hard technology L1-English and L1-Not-English students by the end of the fifth semester.

Interestingly, when the data for this sample is examined the L1-English students have faired worst and failed almost twice as many Humanities courses, on average, as have the L1-Not-English students, although this reasonably large difference in means is not significant and is due only to chance. The bar charts for the mean number of Humanities failed by the students in both primary home language classification systems and the SPSS independent-samples t-test tables relating to H1e can be found in Appendix F, page 204.

3.1.6 Hypothesis H1f

For hypothesis H1f: A higher percentage of Vanier College L1-English hard technology students will have completed all of their required Humanities courses by the end of the fifth semester than L1-Not-English students, the independent variable is the primary home language (English, Not-English) and the dependent variable, the mean of the data, represents the percentage of the students in each primary home language group that have not completed all of their three required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the data cell and if the student has any Humanities courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test examines for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two primary home language categories that have Humanities courses remaining at the end of their fifth semester. The result was that there is no significant difference ($f = 1.943 \Rightarrow t = 1.156$ & $p = 0.253$) between the percentage of students in each primary home language group (L1-English: $\bar{x} = 1 - 0.625 = 0.375$ (37.5%) & L1-Not-English: $\bar{x} = 1 - 0.472 = 0.528$ (58.2%)) that have completed all of their Humanities courses by the end of their fifth semester. Hypothesis H1f has to be rejected and the null hypothesis accepted: There is no difference between the percentage of Vanier College hard technology L1-English and L1-Not-English students that have completed all of their Humanities courses by the end of their fifth semester.

When the data is examined it can be seen that with this sample, more L1-Not-English students have, on average, completed all of their Humanities courses than L1-English students, although the difference in percentage is not significant and is due to chance. The bar charts for the percentage of students with Humanities courses left in both primary home language classification systems and the SPSS

independent-samples t-test tables relating to H1f can be found in Appendix F, page 205.

3.1.7 Hypothesis H1g

For hypothesis H1g: Vanier College L1-English hard technology students will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than L1-Not-English students, the result using the English, Not-English primary home language categories as the independent variable, the average number of combined English and Humanities courses left to complete as the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 1.925 \Rightarrow t = 1.226$ & $p = 0.225$) between the mean number of combined English and Humanities courses (English: $\bar{x} = 2.42$ and Not-English: $\bar{x} = 1.81$) that each of the primary home language groups has left to complete after they have completed all of their program professional courses. Hypothesis H1g has to be rejected and the null hypothesis accepted: There is no difference between the mean number of total English and Humanities courses left to completed by Vanier College hard technology L1-English and L1-Not-English students after they have completed all of their program professional courses.

When the data is examined it can be seen that with this sample, on average, the L1-Not-English students have fewer combined English and Humanities courses left to complete than do the L1-English students, although the difference in means is not significant and is due to chance. The bar charts for the mean number of combined English and Humanities courses left to complete for both primary home language classification systems and the SPSS independent-samples t-test tables relating to H1g can be found in Appendix F, page 206.

3.1.8 *Summary for Research Question 1*

In the case of Research Question 1: Does a Vanier College hard technology student's primary home language have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe? and all seven hypotheses derived from the question, **no link was found between a student's primary home language and their ability to succeed in their English and Humanities courses**. In all seven cases the null hypotheses had to be accepted. Interestingly enough, with this sample the data indicates that for the majority of the hypotheses, not only are the hypotheses not validated, but the opposite is true and that L1-Not-English students have, on average, a slightly better record at succeeding in their English and Humanities courses than do the L1-English students, although the differences in the means are not significant. When a similar survey was administered to a different group of students in 2004 (Robinson, 2004) with that sample, L1-English students had a slightly better record at succeeding in their English and Humanities courses than L1-Not-English students, but again the differences in the means were not significant. This could be accounted for by sample variations. A summary table of the results for Research Question 1 can be found on Appendix F, page 207.

3.2 **Research Question 2**

Research Question 2: Does a Vanier College hard technology L1-Not-English student perceive him- or herself to be less fluent in speaking, reading and writing in English than a L1-English student?

From Research Question 2, three hypotheses were developed relating primary home language to how Vanier College hard technology students rate their abilities (thus, perceive their fluency) in speaking, reading and writing in English using a 4 point Likert scale with the following options:

1. I can understand a bit.
2. I can make myself understood/understand.
3. I am comfortable.
4. I am fluent in this language.

In this case, since the dependent variables, the abilities to speak, read and write in English, are based on a ranking system not a measurement system and we cannot assume that there is equal variance between the values; the Kruskal-Wallis Test for K-Independent Samples is used to test for significant differences between the mean ranks selected by the two primary home language groups. As with the previous research question, the primary home language of the students was re-categorised from English, French and Other to English and Not-English.

3.2.1 Hypothesis H2a

For hypothesis H2a: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to speak English than will L1-English students, the result using the English, Not-English primary home language classification system as the independent variable, the mean rank of their fluency in speaking English that the students assigned themselves as the dependent variable, and the SPSS Kruskal-Wallis test for k-independent samples is that there is a significant difference ($\chi^2 = 20.278$ & $p = 0.000$) between the way in which L1-Not-English students and L1-English students rank themselves (English: $\bar{x} = 4.00$ and Not-English: $\bar{x} = 3.19$) in their ability to speak English. The difference in the means of the two rankings selected by the L1-English and L1-Not-English students is unlikely to have occurred by chance. Examining the data verifies that it is the L1-Not-English students who are, on average, ranking themselves as lower (less fluent – see above Likert scale) in their ability to speak English than are the L1-English students. **Hypothesis H2a can be accepted as true.**

The bar charts for the mean of the ranking of the ability to speak English selected by both primary home language classification systems and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H2a can be found in Appendix G, page 209.

3.2.2 Hypothesis H2b

For hypothesis H2b: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to read English than will L1-English students, the result using the English, Not-English primary home language classification system as the independent variable, the mean rank of their ability to read English that the students assigned themselves as the dependent variable, and the Kruskal-Wallis test for k-independent samples is that there is a significant difference ($\chi^2 = 8.202$ & $p = 0.004$) between the way in which L1-Not-English students and L1-English students rank themselves (English: $\bar{x} = 3.83$ and Not-English: $\bar{x} = 3.39$) in their ability to read English. The difference in the means of the two sets of rankings selected by the L1-English and the L1-Not-English students is unlikely to have occurred by chance. Examining the data verifies that it is the L1-Not English students who are, on average, ranking themselves as lower (less fluent) in their ability to read English than are the L1-English students. **Hypothesis H2b can be accepted as true.**

The bar charts for the mean of the ranking of the ability to read English selected by both primary home language classification systems and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H2b can be found in Appendix G, page 210.

3.2.3 Hypothesis H2c

For hypothesis H2c: Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to write English than will L1-English students, the result using the English, Not-English primary home language classification system as the independent variable, the mean rank of their ability to write English that the students assigned themselves as the dependent variable, and the Kruskal-Wallis test for k-independent samples is that there **is a significant difference** ($\chi^2 = 5.189$ & $p = 0.023$) between the way in which L1-Not-English students and L1-English students rank themselves (English: $\bar{x} = 3.62$ and Not-English: $\bar{x} = 3.19$) in their ability to write in English. The difference in the means of the two sets of rankings selected by the L1-English and L1-Not-English students is unlikely to have occurred by chance. When the data is examined it can be seen that it is the L1-Not-English students who are, on average, ranking themselves as lower in their ability to write in English than are L1-English students. **Hypothesis H2c can be accepted as true.**

The bar charts for the median of the ranking of the ability to write in English selected by both language groupings and the SPSS tables for the Kruskal-Wallis Test for k-independent samples for H2c can be found in Appendix G, page 211.

3.2.4 Summary for Research Question 2

In the case of Research Question 2: Does a Vanier College hard technology L1-Not-English student perceive him- or herself to be less fluent in speaking, reading and writing in English than a L1-English student? **L1-Not-English students did significantly rank themselves, on average, as less fluent, and thus did perceive themselves to be less fluent in their ability to speak, read and write in English.** In the case of all three hypotheses derived from the research question, the difference between the language ability rankings selected by the students in the two primary

home language groups (English and Not-English) was found to be significant and in all cases the L1-Non-English students perceived themselves, on average, to be less fluent in their ability to speak, read and write in English. Summary tables of the results for research question 2 can be found on page 212 of Appendix G.

3.3 Research Question 3

Research Question 3: Does a Vanier College hard technology student's high school language of instruction have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

As with Research Question 1, Research Question 3 led to the development of seven hypotheses related to Secondary School Language of Instruction and the ability of the students to succeed in their English and/or Humanities courses. Again the original three language classification system for language of instruction, consisting of French, English and Other, was modified for statistical testing purposes to a two language classification system consisting of English and Not-English. With these two language groups, testing for significant differences between the means for each of the hypothesis for Research Question 3 was done using the SPSS independent-samples t-tests. Bar charts giving the number and percentages of students that fell into each of the categories for both high school language of instruction classification systems are presented below. Note that again the English (language of instruction) group, as with Research Question 1 and Primary Home Language, is in a minority in that less than 50% of the students attended a high-school whose language of instruction was English.

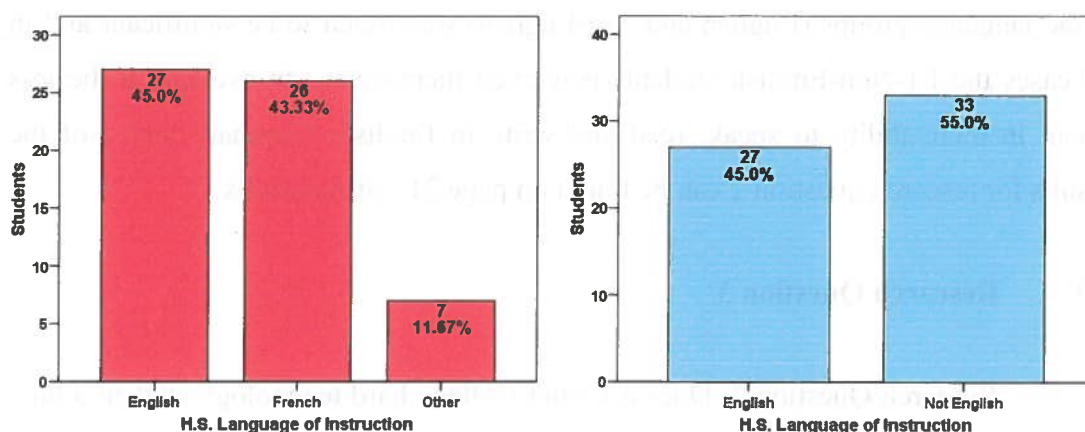


Figure 2: The Two High School Language of Instruction Groupings

3.3.1 Hypothesis H3a

For hypothesis H3a: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required four English courses by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English, the result using for the independent variable, the English, Not-English high school language of instruction classification system, the mean number of English courses completed by each language of instruction group as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 0.010 \Rightarrow t = 0.675$ & $p = 0.502$) between the mean number of English courses completed (English: $\bar{x} = 2.89$ & Not-English: $\bar{x} = 2.70$) by the students in the two high school language of instruction groups. Hypothesis H3a is rejected and the null hypothesis accepted: There is no difference in the mean number of English courses completed by the end of the fifth semester by Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

When the data is examined, there is a small difference, with those students coming from high schools where the language of instruction was English completing slightly more English courses on average, but this difference is not significant and occurs by chance. The bar charts for the mean number of English courses completed by both high school language classification systems and the SPSS independent-samples t-test tables relating to H3a can be found in Appendix H, page 214.

3.3.2 Hypothesis H3b

For hypothesis H3b: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer English courses by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English, the result using the English, Not-English language of instruction classification system for the independent variable, the mean number of English courses failed for the dependent variable and the SPSS independent-samples t-test was that there is no significant difference ($f = 1.222 \Rightarrow t = -0.907$ & $p = 0.368$) between the mean number of English courses failed (English: $\bar{x} = 0.67$ & Not-English: $\bar{x} = 0.94$) by the students in the two high school language of instruction groups. Hypothesis H1b has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses failed by the end of the fifth semester between the Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

When the raw data is examined it can be seen that with this sample the students who attended a high school where the language of instruction was English have failed approximately one third fewer English courses than have those students who attended a high school where the language of instruction was Not-English, although this difference in failure rates is not considered significant. The bar charts

for the mean number of English courses failed by both language groupings and the SPSS independent-samples t-test tables relating to H3b can be found in Appendix H, page 215.

3.3.3 Hypothesis H3c

For hypothesis H3c: A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required English courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English, the independent variable is the high school language of instruction (English, Not-English) and the dependent variable, the mean of the data, represents the percentage of the students in each high school language of instruction group that have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test examines for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two high school language of instruction categories that have English courses remaining at the end of their fifth semester. The result is that no significant difference ($f = 2.411 \Rightarrow t = -0.834$ & $p = 0.408$) exists between the percentage of students in each high school language of instruction group (English: $\bar{x} = 1 - 0.59 = 0.41$ (41%) & Not-English: $\bar{x} = 1 - 0.70 = 0.30$ (30%)) that have completed all of their English courses by the end of the fifth semester. Hypothesis H3c is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have complete all of their English courses by the end of the fifth semester, between those who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

Examining the data will show that for this sample, a slightly higher percentage of students who attended a high school where the language of instruction was English did completed all of their English courses than did students who attended a high school where the language of instruction was Not-English, although this slight difference is not significant. The bar charts for the percentage of students with English courses left for both high school language of instruction classification systems and the SPSS independent-samples t-test tables relating to H3c can be found in Appendix H, page 216.

3.3.4 *Hypothesis H3d*

For hypothesis H3d: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required three Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English, the result using the English, Not-English high school language of instruction classification system as the independent variable, the average number of Humanities courses completed as the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 2.819 \Rightarrow t = -0.844$ & $p = 0.402$) between the mean number of Humanities courses completed (English: $\bar{x} = 1.96$ & Not-English: $\bar{x} = 2.18$) by the students in each of the two high school language of instruction groups. Hypothesis H3d has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses completed by the end of the fifth semester, between Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

When the data is examined it can be seen that with this sample, the students who attended a high school where the language of instruction was English have

actually completed, on average, slightly fewer Humanities courses than the students who attended a high school where the language of instruction was Not-English, although the difference is not significant but is due to chance. The bar charts for the average number of Humanities completed by both high school language of instruction classification systems and the SPSS independent-samples t-test tables relating to H3d can be found in Appendix H, page 217.

3.3.5 Hypothesis H3e

For hypothesis H3e: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English, the result found using the English, Not-English high school language of instruction categories as the independent variable, the average number of Humanities courses failed as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 0.545 \Rightarrow t = 0.595$ & $p = 0.554$) between the mean number of Humanities courses failed (English: $\bar{x} = 0.44$ & Not-English: $\bar{x} = 0.33$) by the students in each of the two high school language of instruction groups. Hypothesis H3e is rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses failed by the end of the fifth semester, between Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

On examining the data it can be seen that for this sample the opposite is actually true. The students who attended a high school where the language of instruction was English did, on average, fail slightly more Humanities courses than did those students who attended a high school where the language of instruction was Not-English, although the difference is not significant and is due to chance. The bar

charts for the average number of Humanities courses failed by both high school language of instruction classification systems and the SPSS independent-samples t-test tables relating to H3e can be found in Appendix H, page 218.

3.3.6 Hypothesis H3f

For hypothesis H3f: A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English, the independent variable is the high school language of instruction and the dependent variable, the mean of the data, represents the percentage of the students in each high school language of instruction group (English, Not-English) that have not completed all of their three required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any Humanities courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test examines for differences between the mean number of students (which in this case, based on $1=100\%$, represents the percentage of students) in the two high school language of instruction categories that have Humanities courses remaining at the end of their fifth semester. The result was that there is no significant difference ($f = 0.313 \Rightarrow t = 0.307 \ \& \ p = 0.760$) between the percentage of students in each of the high school language of instruction groups (English: $\bar{x} = 1 - 0.56 = 0.44$ (44%) & Not-English: $\bar{x} = 1 - 0.52 = 0.48$ (48%)) that have completed all of their Humanities courses by the end of their fifth semester. Hypothesis H3f has to be rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have complete all of their Humanities courses by the end of the fifth semester, between those who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

In fact, when the data for this sample was examined, a slightly greater number of students who attended a high school where the Language of Instruction was Not-English did complete all of their Humanities courses then did the students who attended a high school where the Language of Instruction was English, although the difference is not significant and is due to chance. The bar charts for the percentage of students that have Humanities courses remaining for both high school language of instruction classification systems and the SPSS independent-samples t-test tables relating to H3f can be found in Appendix H, page 219.

3.3.7 Hypothesis H3g

For hypothesis H3g: Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than those students who attended a high school where the language of instruction was Not-English, the result using the English, Not-English high school language of instruction categories for the independent variable, the average combined number of English and Humanities courses left for the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 0.707 \Rightarrow t = 0.224$ & $p = 0.824$) between the mean number of total English and Humanities courses (English: $\bar{x} = 2.11$ and Not-English: $\bar{x} = 2.00$) that the students of each of the high school language of instruction groups has left to complete after they have completed all of their program professional courses. Hypothesis H3g is rejected and the null hypothesis accepted: There is no difference in the mean number of total English and Humanities courses left to complete after they have completed all of their program professional courses between the Vanier College hard technology students who attended a high school where the language of instruction was English, and those who attended a high school where the language of instruction was Not-English.

When the data is examined it can be seen that with this sample, the students who attended a high school where the language of instruction was English actually have slightly more total English and Humanities courses left to complete than do the students who attended a high school where the Language of Instruction was Not-English, although the difference is not significant and is due to chance. The bar charts for the average total number of English and Humanities courses remaining for both high school language of instructions classification systems and the SPSS independent-samples t-test tables relating to H3g can be found in Appendix H, page 220.

3.3.8 *Summary for Research Question 3*

In the case of Research Question 3: Does a Vanier College hard technology student's high school language of instruction have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe? and all seven hypotheses derived from the question, **no link was found between a student's high school language of instruction and their ability to succeed in their English and Humanities courses.** In all seven cases the null hypotheses had to be accepted. In fact, with this sample the data indicates that for the hypotheses relating to English courses the students who attended a high school where the language of instruction was English did do slightly better than the students who attended a high school where the language of instruction was Not-English, but for Humanities courses the opposite is true. The students who attended a high school where the language of instruction was English did slightly worst than the students who attended a high school where the language of instruction was Not-English, although in all cases, the difference is not significant, but is due to chance. A summary table of the results for all seven of the hypothesis related to Research Question 3 can be found in Appendix H on page 221.

3.4 Research Question 4

Research Question 4: Does a Vanier College hard technology student who attended a high school where the language of instruction was not English perceive him- or herself to be less fluent in speaking, reading and writing in English than does a student who attended a high school where the language of instruction was English?

Research Question 4, is similar to Research Question 2, but using a different independent variable. Thus as with research question 2, for research question 4, three hypotheses were developed but in this case, relating high school language of instruction to how Vanier College hard technology student rate their abilities in speaking, reading and writing in English using the same 4 point Likert scale with the following options:

1. I can understand a bit.
2. I can make myself understood/understand.
3. I am comfortable.
4. I am fluent in this language.

As mentioned earlier, since in this case the dependent variables, the abilities to speak, read and write in English are based on a ranking system, not a measurement system, and we cannot assume that there is equal variance between the values, the SPSS Kruskal-Wallis test for k-independent samples was used to test for significant differences between the two groups. As was done for research question 3, high school language of instruction was re-categorised from the original three language groups (English, French & Other) to two language groups, English and Not-English.

3.4.1 Hypothesis H4a

For hypothesis H4a: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average,

rank themselves as lower in their ability to speak English than those students who attended a high school where the language of instruction was English, the result using the English, Not-English high school language of instruction categories as the independent variable, the mean rank of their fluency in speaking English that the students assigned themselves as the dependent variable, and the Kruskal-Wallis test for k-independent samples is that there **is a significant difference** ($\chi^2 = 13.076$ & $p = 0.000$) between the way in which students who attended a high school whose language of instruction was English and students who attended a high school whose language of instruction was Not-English rank themselves (English: $\bar{x} = 3.89$ and Not-English: $\bar{x} = 3.21$) in their ability to speak English. The difference in the means of the two of rankings selected by the two high school language of instruction groups did not occur by chance. That it is the students who attended a high school where the language of instruction was Not-English who are, on average, ranking themselves lower (less fluent) in their ability to speak English, than the students who attended a high school where the language of instruction was English can be verified by checking the data. **Hypothesis H4a can be accepted as true.**

The bar charts for the mean of the ranking of the ability to speak English selected by both high school language of instruction classification systems and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H4a can be found in Appendix I, page 223.

3.4.2 *Hypothesis H4b*

For hypothesis H4b: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to read English than those students who attended a high school where the language of instruction was English, the result using the English, Not-English high school language of instruction categories as the independent variable, the mean rank of their ability to read English that students

assigned themselves as the dependent variable, and the Kruskal-Wallis test for k-independent samples is that there is no significant difference ($\chi^2 = 3.000$ & $p = 0.083$) between the way in which students who attended a high school where the language of instruction was English and those that attended a high school where the language of instruction was Not-English rank themselves (English: $\bar{x} = 3.70$ and Not-English: $\bar{x} = 3.45$) in their ability to read English. Any difference in the means of the two sets of rankings selected by the students in the two high school language of instruction categories occurred by chance. Hypothesis H4b has to be rejected and the null hypothesis has to be accepted: There is no difference in the ranking of their ability to read in English as selected by Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

When the data for this sample is examined it can be seen that the students in this sample who attended a high school where the language of instruction was Not-English, did on average, rank themselves lower in their ability to read English, than did students who attended a high school where the language of instruction was English, but as stated above the difference in the means of the rankings is not significant, and occurred by chance. The bar charts for the mean of the rankings of the ability to read English selected by both high school language of instruction classification systems and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H4b can be found in Appendix I, page 224.

3.4.3 Hypothesis H4c

For hypothesis H4c: Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to write English than those students who attended a high school where the language of instruction was English, the result using the English, Not-English high school language of instruction categories as the

independent variable, the mean rank of their ability to write in English as the dependent variable, and the Kruskal-Wallis test for k-independent samples is that there is no significant difference ($\chi^2 = 2.124$ & $p = 0.145$) between the way in which students who attended a high school where the language of instruction was English and students who attended a high school where the language of instruction was Not-English rank themselves (English: $\bar{x} = 3.52$ and Not-English: $\bar{x} = 3.24$) in their ability to write in English. The difference in the means of the two sets of rankings selected by the two high school language of instruction groups occurred by chance. Hypothesis H4c has to be rejected and the null hypothesis has to be accepted: There is no difference in the ranking of their ability to write in English as selected by Vanier College hard technology students who attended a high school where the language of instruction was English and those who attended a high school where the language of instruction was Not-English.

When the data is examined it can be seen that for this sample, the students who attended a high school where the language of instruction was English did ranked themselves marginally higher, on average, than did students who attended a high school where the language of instruction was Not-English, but the difference, as stated above, was not significant and occurred by chance. The bar charts for the median of the ranking of the ability to write in English selected by both high school language of instruction classification systems and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H4c can be found in Appendix I, page 225.

3.4.4 *Summary for Research Question 4*

In the case of Research Question 4: Does a Vanier College hard technology student who attended a high school where the language of instruction was not English perceive him- or herself to be less fluent in speaking, reading and writing in English than does a student who attended a high school where the language of instruction was English? only one of the three hypotheses could be accepted as true. Students who

attended a high school where the language of instruction was Not-English did rank themselves as significantly lower, on average, in their ability to speak English than did students who attended a high school where the language of instruction was English but did not rank themselves significantly lower in their abilities to read and write in English, and thus we can say that **students who attended a high school where the language of instruction was Not-English do perceive themselves to be less fluent in their ability to speak in English, but do not perceive themselves to be less fluent in their ability to read and write in English.** Although, in the case of reading and writing, with this sample, students who attended a high school whose language of instruction was Not-English did rank themselves slightly lower, on average, in their ability to read and write in English, than did students who attended a high school where the language of instruction was English, the difference was not statistically significant and must be judge to have occurred by chance. Summary tables of the results for research question 4 can be found on page 226 of Appendix I.

3.5 Research Question 5

Research Question 5: Does a Vanier College hard technology student's cultural background (i.e. the student's place of birth and/or the student's parents' place of birth) have an impact on his or her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Research Question 5 led to the development of fourteen hypotheses related to cultural background and the ability of the students to complete their English and/or Humanities courses. In order to establish non-Canadian cultural background, two separate factors were examined. The first was the student's place of birth. The student was classified as being born in Canada or not being born in Canada. The second factor examined was the student's parents' place of birth. To simplify matters the parents were examined together as either both being born in Canada or not both being born in Canada. The not both being born in Canada category could signify that the

mother, the father or both parents were born outside of Canada. The assumption made was that if even one of the student's parents was born outside of Canada the student would be exposed to that cultural background while growing up. With only two groups, testing for significant differences between the means for each of the hypothesis for Research Question 5 was done using the SPSS independent-samples t-tests. Bar charts giving the number and percentages of students that fell into each of the cultural by birth or parents place of birth categories can be seen below.

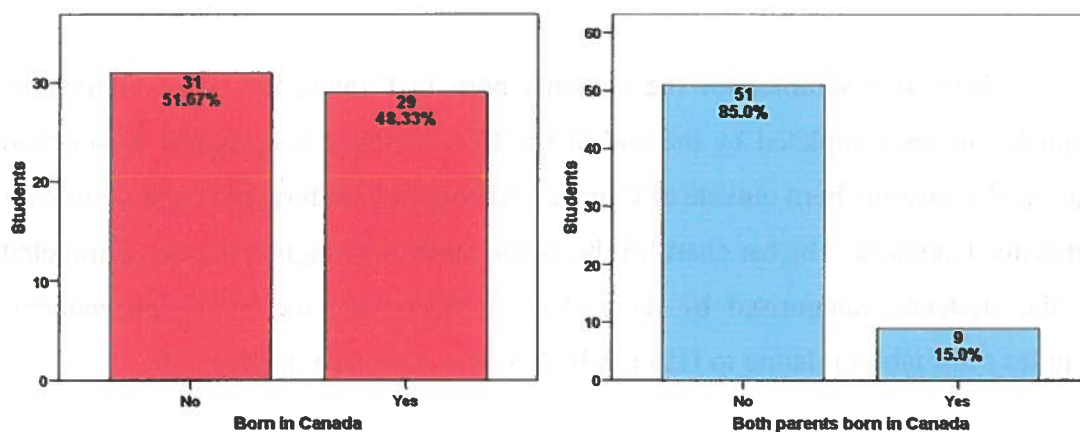


Figure 3: Place of Birth of Students and of Students' Parents

Note that although only slightly more than 50% of the students were not born in Canada, 85% of the students in the study had one or both parents not born in Canada. Only 15% of the students actually had both parents born in Canada. This is very similar to the results obtained in an earlier survey (Robinson, 2004).

3.5.1 Hypothesis 5Ha

For hypothesis H5a: Vanier College hard technology students who were born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students who were not born in Canada, the result found using the place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable, the mean number of English courses completed

as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 3.604 \Rightarrow t = 0.168$ & $p = 0.867$) between the mean number of English courses completed (Born-in-Canada: $\bar{x} = 2.76$ & Not-Born-in-Canada: $\bar{x} = 2.81$) by the students grouped by place of birth. Hypothesis H5a has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses completed by the end of the fifth semester, between Vanier College hard technology students who were born in Canada and those who were not born in Canada.

With this sample, for the students born in Canada the mean number of English courses completed by the end of the fifth semester was slightly lower than that for the students born outside of Canada, although this difference is not significant but is due to chance. The bar chart for the mean number of English courses completed by the students, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5a can be found in Appendix J, page 228.

3.5.2 Hypothesis H5b

For hypothesis H5b: Vanier College hard technology students who were born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students who were not born in Canada, the result using the place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable, the mean number of English courses failed as the dependent variable, and the SPSS independent-samples t-test was that there is no significant difference ($f = 0.848 \Rightarrow t = 0.151$ & $p = 0.880$) between the mean number of English courses failed (Born-in-Canada: $\bar{x} = 0.79$ & Not-Born-in-Canada: $\bar{x} = 0.84$) by the students based on place of birth. Hypothesis H5b has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses failed by the end of the fifth semester, between Vanier College hard technology students who were born in Canada and those who were not born in Canada.

When the data is examined it can be seen that with this sample the students who were born in Canada failed slightly fewer courses than those not born in Canada, although this difference in failure rates is not considered significant, but is due to chance. The bar chart for the mean number of English courses failed by the end of the fifth semester by the students categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5b can be found in Appendix J, page 229.

3.5.3 Hypothesis H5c

For hypothesis H5c: A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students who were not born in Canada, the independent variable is the student's place of birth (Born-in-Canada, Not-Born-in-Canada) and dependent variable, the mean of the data, represents the percentage of the students in each place of birth category who have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test looks for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two places of birth categories who have English courses remaining at the end of their fifth semester. The result was there is no significant difference ($f = 3.482 \Rightarrow t = 0.994$ & $p = 0.325$) between the percentage of students in each place of birth category (Born-in-Canada: $\bar{x} = 1 - 0.59 = 0.41$ (41%) & Not-Born-in-Canada: $\bar{x} = 1 - 0.71 = 0.29$ (29%)) who have completed all of their English courses by the end of the fifth semester. Hypothesis H5c is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their English courses by the end

of the fifth semester, between those who were born in Canada and those who were not born in Canada that.

Examining the data will show that for this sample, the students born in Canada are, on average, more likely to have completed all of their English courses by the end of the fifth semester than the students not born in Canada, although the difference in completion rates is not significant and is due to chance. The bar chart for the percentage of students with English courses left at the end of their fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5c can be found in Appendix J, page 230.

3.5.4 *Hypothesis H5d*

For hypothesis H5d: Vanier College hard technology students who were born in Canada will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students who were not born in Canada, the result using the place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable, the mean number of Humanities courses completed as the dependent variable, and the SPSS independent-samples t-tests was that there is no significant difference ($f = 3.505 \Rightarrow t = 0.884$ & $p = 0.380$) between the mean number of Humanities courses completed (Born-In-Canada: $\bar{x} = 1.97$ & Not-Born-in-Canada: $\bar{x} = 2.19$) by the students in each of the two place of birth groups. Hypothesis H5d has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses completed by the end of the fifth semester, between Vanier College hard technology students who were born in Canada and those who were not born in Canada.

In this sample, the students who were born in Canada have actually completed slightly fewer Humanities courses, on average, by the end of the fifth semester, than those not born in Canada, although the difference in means is not

significant, but is due to chance. The bar chart for the average number of Humanities courses completed by the students by the end of the fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5d can be found in Appendix J, page 231.

3.5.5 Hypothesis H5e

For hypothesis H5e: Vanier College hard technology students who were born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students who were not born in Canada, the result found using the place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable, the mean number of Humanities courses failed as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 0.000 \Rightarrow t = 0.042$ & $p = 0.967$) between the mean number of Humanities courses failed (Born-in-Canada: $\bar{x} = 0.379$ & Not-Born-in-Canada: $\bar{x} = 0.387$) by each of the two place of birth groups. Hypothesis H5e has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses failed by the end of the fifth semester, between Vanier College hard technology students who were born in Canada and those who were not born in Canada.

When the data is examined, it can be seen that for this sample the students not born in Canada have on average, failed very slightly more Humanities courses by the end of the fifth semester than have the students born in Canada, although the difference in failure rates is not significant but is due to chance. The bar chart for the average number of Humanities courses failed by the students by the end of the fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5e can be found in Appendix J, page 232.

3.5.6 Hypothesis H5f

For hypothesis H5f: A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students who were not born in Canada, the independent variable is the student's place of birth (Born-in-Canada, Not-Born-in-Canada) and the dependent variable, the mean of the data, represents the percentage of the students from each place of birth category (Born-in-Canada, Not-Born-in-Canada) that have not completed all of their three required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any Humanities courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test looks for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two places of birth categories who have Humanities courses remaining at the end of their fifth semester. The result using the SPSS independent-samples t-test was that there is no significant difference ($f = 0.180 \Rightarrow t = 0.238$ & $p = 0.813$) between the percentage of students in each place of birth category (Born-in-Canada: $\bar{x} = 1 - 0.517 = 0.483$ (48.3%) & Not-Born-in-Canada: $\bar{x} = 1 - 0.548 = 0.452$ (45.2%)) who have completed all of their Humanities courses by the end of their fifth semester. Hypothesis H5f is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their Humanities courses by the end of the fifth semester, between those who were born in Canada and those who were not born in Canada that.

When the data is examined, with this sample, students who were born in Canada are, on average, slightly more likely to have completed all of their Humanities courses by the end of the fifth semester than students who were not born in Canada, although this difference is not significant, but is due to chance. The bar

chart for the percentage of students with Humanities courses left by the end of the fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5f can be found in Appendix J, page 233.

3.5.7 Hypothesis H5g

For hypothesis H5g: Vanier College hard technology students who were born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than will those students who were not born in Canada, the result found using the place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable, the mean number of combined English and Humanities courses left to complete after the students have completed all of their program professional courses as the dependent variable, and the SPSS independent-samples t-tests was that there is no significant difference ($f = 7.127 \Rightarrow t = 0.744$ & $p = 0.461$) between the mean number of total English and Humanities courses (Born-in-Canada: $\bar{x} = 2.24$ and Not-Born-in-Canada: $\bar{x} = 1.87$) that each place of birth category has left to complete after they have completed all of their program professional courses. Hypothesis H5g has to be rejected and the null hypothesis accepted: There is no difference in the mean number of total English and Humanities courses left to complete after they have completed all of their program professional courses between Vanier College hard technology students who were born in Canada and those who were not born in Canada.

When the data is examined we can see with this sample, on average, the students born in Canada have more combined English and Humanities courses left to complete than do the students not born in Canada, although the difference is not considered to be significant, but due to chance. The bar chart for the average number of English and Humanities courses left to complete by the students by the end of the

fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5g can be found in Appendix J, page 234.

3.5.8 Hypothesis H5h

For hypothesis H5h: Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students whose parents were not both born in Canada, the result found using the parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable, the mean number of English courses completed as the dependent variable, and the SPSS independent-samples t-test was there is no significant difference ($f = 0.892 \Rightarrow t = -1.665$ & $p = 0.101$) between the mean number of English courses completed (Both-Born-in-Canada: $\bar{x} = 3.33$ & Not-Both-Born-in-Canada: $\bar{x} = 2.69$) by the students categorised by parents' place of birth. Hypothesis H5h has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses completed by the end of the fifth semester, between Vanier College hard technology students whose parents were both born in Canada and those whose parents were not both born in Canada.

With this sample, the students whose parents were both born in Canada completed, on average, more English courses by the end of their fifth semester than did those students whose parents were not both born in Canada, although the difference not significant, but due to chance. The bar chart for the mean number of English courses completed by the students by the end of the fifth semester, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5h can be found in Appendix J, page 235.

3.5.9 Hypothesis H5i

For hypothesis H5i: Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students whose parents were not both born in Canada, the result found using the parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable, the mean number of English courses failed as the dependent variable, and the SPSS independent-samples t-test was that there is a significant difference ($f = 8.975 \Rightarrow t = 3.112$ & $p = 0.004$) between the mean number of English courses failed (parents Both-Born-in-Canada: $\bar{x} = 0.222$ & parents Not-Both-Born-in-Canada: $\bar{x} = 0.922$) by the two groups of students categorised parents' place of birth. The difference between the means is unlikely to have occurred by chance. That it is the students whose parents are both born in Canada who are, on average, failing fewer English courses by the end of the fifth semester, than students whose parents are not both born in Canada can be verified by checking the data. **Hypothesis H5i can thus be accepted as true.**

When the data is examined it can be seen that the students whose parents were not both born in Canada actually failed slightly over four times as many English courses as those whose parents were both born in Canada, and this difference in failure rates is considered highly significant. The bar chart for the mean number of English courses failed by the students by the end of the fifth semester, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5i can be found in Appendix J, page 236.

3.5.10 Hypothesis H5j

For hypothesis H5j: A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students

whose parents were not both born in Canada, the independent variable is the parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) and the dependent variable, the mean of the data, represents the percentage of the students in each of the parents' place of birth category that have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS independent-samples t-test looks for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two parents' place of birth categories that have English courses still remaining at the end of their fifth semester. The result using the SPSS independent-samples t-test was there is **a statistically significant difference** ($f = 0.188 \Rightarrow t = 2.212$ & $p = 0.031$) between the percentage of students (parents Born-in-Canada: $\bar{x} = 1 - 0.333 = 0.667$ (66.7%) & parents Not-Born-in-Canada: $\bar{x} = 1 - 0.706 = 0.294$ (29.4%)) that have completed all of their English courses by the end of the fifth semester. Examining the data we can see that with this sample, it is the students whose parents were both born in Canada who are, on average, more than twice as likely to have completed all of their English courses by the end of the fifth semester than are the students whose parents were not both born in Canada. **Hypothesis H5j can thus be accepted as true.**

The bar charts for the percentage of students with English courses left at the end of their fifth semester, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5j can be found in Appendix J, page 237.

3.5.11 Hypothesis H5k

For hypothesis H5k: Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required

three Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada, the result found using the parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable, the mean number of English courses completed as the dependent variable, and the SPSS independent-samples t-tests was that there is no significant difference ($f = 1.309 \Rightarrow t = -1.950$ & $p = 0.056$) between the mean number of Humanities courses completed (parents Both-Born-In-Canada: $\bar{x} = 2.67$ & parents Not-Both-Born-in-Canada: $\bar{x} = 1.98$) by students in each of the two parents' place of birth groups. Hypothesis H5k has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses completed by the end of the fifth semester, between Vanier College hard technology students whose parents were both born in Canada and those whose parents were not both born in Canada.

In this sample, the students whose parents were both born in Canada did completed more Humanities courses by the end of the fifth semester, than those whose parents were not both born in Canada, and although the difference in means is not actually significant, it was very close to significance with $p = 0.056$. The bar chart for the mean number of Humanities courses completed by the students by the end of the fifth semester, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5k can be found in Appendix J, page 238.

3.5.12 Hypothesis H5l

For hypothesis H5l: Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada, the result found using the students' parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable, the mean number of Humanities courses failed as the dependent variable, and the SPSS

independent-samples t-tests is there is a highly significant difference ($f = 15.748 \Rightarrow t = 4.256$ & $p = 0.000$) between the mean number of Humanities courses failed (parents Both-Born-in-Canada: $\bar{x} = 0.000$ & parents Not-Both-Born-in-Canada: $\bar{x} = 0.451$) by the two groups of students categorised parents' place of birth. The difference between the means is unlikely to have occurred by chance. That it is the students whose parents are both born in Canada, on average, who are failing fewer Humanities courses by the end of the fifth semester than the students whose parents are not both born in Canada can be verified by checking the data. **Hypothesis H5l can thus be accepted as true.**

It should be noted that in this sample, the students whose parents were both born in Canada did not fail any Humanities courses by the end of the fifth semester, while the students whose parents were not both born in Canada failed slightly less than 1 course for every two students during this same time period. The bar chart for the mean number of Humanities courses failed by the students by the end of the fifth semester, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5l can be found in Appendix J, page 239.

3.5.13 Hypothesis H5m

For hypothesis H5m: A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada, the independent variable is the student's parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) and the dependent variable, the mean of the data represents the percentage of the students from each parents' place of birth category that have not completed all of their three required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any Humanities courses left, a

1 is entered into that data cell. The SPSS independent-samples t-test looks for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the two parents' place of birth categories that have Humanities courses remaining at the end of their fifth semester. The result using the SPSS independent-samples t-test was that **there is significant difference** ($f = 9.877 \Rightarrow t = 2.251$ & $p = 0.044$) between the percentage of students in each group (parents Both-Born-in-Canada: $\bar{x} = 1 - 0.222 = 0.778$ (77.8%) & parents Not-Both-Born-in-Canada: $\bar{x} = 1 - 0.588 = 0.412$ (41.2%)) that have completed all of their Humanities courses by the end of their fifth semester. The difference between the percentages is unlikely to have occurred by chance. That it is a higher percentage of the students whose parents are both born in Canada will have completed all of their Humanities courses by the end of the fifth semester than will have students whose parents are not both born in Canada. Which group has the higher percentage was verified by examining the data. **Hypothesis H5m can thus be accepted as true.**

When the data is examined, it was obvious that it was the students whose parents were both born in Canada who are, on average, close to twice as likely to have completed all of their Humanities courses by the end of the fifth semester, as those students whose parents were not both born in Canada, and this difference is considered significant. The bar chart for the percentage of students with Humanities courses left by the end of the fifth semester, categorised by their place of birth, and the SPSS independent-samples t-test tables relating to H5m can be found in Appendix J, page 240.

3.5.14 Hypothesis H5n

For hypothesis H5n: Vanier College hard technology students whose parents were both born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program

professional courses than will those students whose parents were not both born in Canada, the result found using the students' parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable, the mean number of combined English and Humanities courses left to complete after the students have completed all of their program professional courses as the dependent variable, and the SPSS independent-samples t-test was that **there is significant difference** ($f = 0.842 \Rightarrow t = 2.042$ & $p = 0.046$) between the mean number of English and Humanities courses (parents Both-Born-in-Canada: $\bar{x} = 0.889$ and parents Not-Both-Born-in-Canada: $\bar{x} = 2.255$) that each of the groups has left to complete after they have completed all of their program professional courses. The difference between the means is unlikely to have occurred by chance. That it is the students whose parents are both born in Canada who will, on average, have fewer combined English and Humanities course left to completed after they have completed all of their program professional courses than will the students whose parents are not both born in Canada can be verified by checking the data. **Hypothesis H5n can thus be accepted as true.**

When the data is examined it can be seen that for this sample, on average, the students whose parent were not both born in Canada have over two courses to complete and those whose parents were both born in Canada have slightly less than one course left after they have completed all of their program professional courses. The bar chart for the mean number of English and Humanities courses left to completed after the students have completed all of their professional courses, categorised by their parents' place of birth, and the SPSS independent-samples t-test tables relating to H5n can be found in Appendix J, page 241.

3.5.15 *Summary for Research Question 5*

In the case of Research Question 5: Does a Vanier College hard technology student's cultural background (i.e. the student's place of birth and/or the student's parents' place of birth) have an impact on his or her ability to succeed in the required

English and/or Humanities courses within the three year technology program timeframe? the student's culture was actually approached from two directions, with two different independent variables, the student's place of birth (Canada, Not-Canada) and the student's parents' place of birth (Both-Canada, Not-Both-Canada). Surprisingly it is the student's parents' place of birth that has more of an impact on the ability of the student to succeed in his or her English and Humanities courses than does the student's place of birth.

For each of the independent variables seven hypotheses were developed relating to the student's success in their English and Humanities courses. In the case of the student's place of birth (Canada, Not-Canada), no significant difference was found in their ability to succeed in their English and Humanities courses. **The student's place of birth has no effect on their ability to succeed in their English and Humanities courses.** In the case of the student's parents' place of birth (Both-Canada, Not-Both-Canada) significant difference between the means of the dependent variables was found in five of the seven factors examined leading to the conclusion that **the student's parents' place of birth does have a significant impact on the student's ability to succeed in their English and Humanities courses.** Students whose parents where both born in Canada failed fewer English courses, had a greater chance of completing all of their required English courses by the end of their fifth semester, failed fewer Humanities courses, had a greater chance of completing all of their three required Humanities courses by the end of the fifth semester and had fewer English and Humanities courses to complete after they had completed all of their program professional courses than students whose parents were not both born in Canada. From this it appears that the cultural influences of the parents has more of a significant impact on the student's ability to succeed in their English and Humanities courses than any other factor studied. A summary table of the results for research question 5 with the student's place of birth as the independent variable can be found on page 242 in Appendix J. A second summary table with the

students' parents' place of birth as the independent variable can be found on page 243 of Appendix J.

3.6 Research Question 6

Research Question 6: Does a Vanier College hard technology student whose cultural background is not Canadian perceive him- or herself to be less fluent in speaking, reading and writing in English than a student whose cultural background is Canadian?

Research Question 6 led to the development of six hypotheses related to Cultural background, three for each of the independent variables, and how Vanier College hard technology students rate their abilities in speaking, reading and writing in English using a 4 point Likert scale with the following options:

1. I can understand a bit.
2. I can make myself understood/understand.
3. I am comfortable.
4. I am fluent in this language.

As discussed earlier, since the dependent variables, the abilities to speak, read and write in English are based on a ranking system, not a measurement system, and we cannot assume that there is equal variance between the rating values, the Kruskal-Wallis test for k-independent samples is used to test for significant differences between the groups. As previously explained, cultural background is considered to be dependent on the students', and the students' parents' place of birth.

3.6.1 Hypothesis H6a

For hypothesis H6a: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to speak

English than those students who were born in Canada, the result using the student's place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable and the mean rank of their ability to speak English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is a **significant difference** ($\chi^2 = 9.888$ & $p = 0.002$) between the way in which students who were born in Canada and students who were not born in Canada rank themselves (Born-in-Canada: $\bar{x} = 3.79$ and Not-Born-in-Canada: $\bar{x} = 3.26$) in their ability to speak English. The difference in the medians of the two sets of rankings selected by the students born in Canada and those who were not born in Canada is unlikely to have occurred by chance. Examining the data verifies that the students who were not born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to speak English than are the students who were born in Canada. **Hypothesis H6a can be accepted as true.**

The bar chart for the mean of the ranking of the ability to speak English selected by students according to their place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6a can be found in Appendix K, page 245.

3.6.2 *Hypothesis H6b*

For hypothesis H6b: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to read English than those students who were born in Canada, the result using the student's place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable and the mean rank of their ability to speak English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is a **significant difference** ($\chi^2 = 7.931$ & $p = 0.005$) between the way in which students who were born in Canada and students who were not born in Canada rank themselves (Born-in-Canada: $\bar{x} = 3.79$ and Not-Born-in-Canada: $\bar{x} = 3.35$) in

their ability to read English. The difference in the medians of the two sets of rankings selected by the students born in Canada and those who were not born in Canada is unlikely to have occurred by chance. Examining the data verifies that the students who were not born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to read English than are the students who were born in Canada. **Hypothesis H6b can be accepted as true.**

The bar chart for the mean of the ranking of the ability to read English selected by students according to their place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6b can be found in Appendix K, page 246.

3.6.3 *Hypothesis H6c*

For hypothesis H6c: Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to write English than those students who were born in Canada, the result using the student's place of birth (Born-in-Canada, Not-Born-in-Canada) as the independent variable and the mean rank of their ability to write in English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is a **significant difference** ($\chi^2 = 5.586$ & $p = 0.018$) between the way in which students who were born in Canada and students who were not born in Canada rank themselves (Born-in-Canada: $\bar{x} = 3.59$ and Not-Born-in-Canada: $\bar{x} = 3.16$) in their ability to write English. The difference in the medians of the two sets of rankings selected by the students born in Canada and those who were not born in Canada is unlikely to have occurred by chance. Examining the data verifies that the students who were not born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to write in English than are the students who were born in Canada. **Hypothesis H6c can be accepted as true.**

The bar chart for the mean of the ranking of the ability to write in English selected by students according to their place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6c can be found in Appendix K, page 247.

3.6.4 Hypothesis H6d

For hypothesis H6d: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to speak English than those students whose parents were both born in Canada, the result using the student's parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable and the mean rank of their ability to speak English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is a **significant difference** ($\chi^2 = 5.368$ & $p = 0.021$) between the way in which students whose parents were both born in Canada and students whose parents were not both born in Canada rank themselves (parents Both-Born-in-Canada: $\bar{x} = 4.00$ and parents Not-Both-Born-in-Canada: $\bar{x} = 3.43$) in their ability to speak English. The difference in the medians of the two sets of rankings selected by the students whose parents were both born in Canada and those whose parents were not both born in Canada is unlikely to have occurred by chance. Examining the data verifies that the students whose parents were not both born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to speak English than are the students whose parents were both born in Canada. **Hypothesis H6d can be accepted as true.**

The bar chart for the mean of the ranking of the ability to speak in English selected by students according to their parents' place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6d can be found in Appendix K, page 248.

3.6.5 Hypothesis H6e

For hypothesis H6e: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to read English than those students whose parents were both born in Canada, the result using the student's parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable and the mean rank of their ability to read English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is no significant difference ($\chi^2 = 1.272$ & $p = 0.259$) between the way in which students whose parents were both born in Canada and students whose parents were not both born in Canada rank themselves (parents Both-Born-in-Canada: $\bar{x} = 3.78$ and parents Not-Both-Born-in-Canada: $\bar{x} = 3.53$) in their ability to read English. The difference in the medians of the two sets of rankings selected by the students whose parents were both born in Canada and those whose parents were not both born in Canada occurred by chance. Examining the data indicates that although the students whose parents were not both born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to read English than are the students whose parents were both born in Canada, the difference is not considered to be significant and occurred by chance. Hypothesis H6e has to be rejected and the null hypothesis accepted: There is no difference in the ranking of the ability to read English, as selected by Vanier College Hard Technology students whose parents were both born in Canada and those whose parents were not both born in Canada.

The bar chart for the mean of the ranking of the ability to read in English selected by students according to their parents' place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6e can be found in Appendix K, page 249.

3.6.6 Hypothesis H6f

For hypothesis H6f: Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to write English than those students whose parents were both born in Canada, the result using the student's parents' place of birth (Both-Born-in-Canada, Not-Both-Born-in-Canada) as the independent variable and the mean rank of their ability to write in English that the students assigned themselves as the dependent variable and the Kruskal-Wallis test for k-independent samples is that there is a no significant difference ($\chi^2 = 0.133$ & $p = 0.715$) between the way in which students whose parents were both born in Canada and students whose parents were not both born in Canada rank themselves (parents Both-Born-in-Canada: $\bar{x} = 3.44$ and parents Not-Both-Born-in-Canada: $\bar{x} = 3.35$) in their ability to write in English. The difference in the medians of the two sets of rankings selected by the students whose parents were both born in Canada and those whose parents were not both born in Canada occurred by chance. Examining the data indicates that although the students whose parents were not both born in Canada are, on average, ranking themselves as lower (less fluent) in their ability to write in English than are the students whose parents were both born in Canada, the difference is not considered to be significant and occurred by chance. Hypothesis H6e has to be rejected and the null hypothesis accepted: There is no difference in the ranking of the ability to write in English, as selected by Vanier College Hard Technology students whose parents were both born in Canada and those whose parents were not both born in Canada.

The bar chart for the mean of the ranking of the ability to write in English selected by students according to their parents' place of birth and the SPSS tables for the Kruskal-Wallis test for k-independent samples for H6f can be found in Appendix K, page 250.

3.6.7 *Summary for Research Question 6*

In the case of Research Question 6: Does a Vanier College hard technology student whose cultural background is not Canadian perceive him- or herself to be less fluent in speaking, reading and writing in English than a student whose cultural background is Canadian? cultural background was approached from two different directions, the student's place of birth and the student's parents' place of birth. For the perceived ability to speak, read and write in English, the student's place of birth is more significant than the student's parents' place of birth. In the case of the student's place of birth, **students not born in Canada did perceive themselves as being significantly less fluent (lower mean ranking) in their ability to speak, read and write in English as compared to students who were born in Canada.** When the parents' place of birth was used as the independent variable, **the students whose parents were not both born in Canada did perceive themselves as significantly less fluent, on average, in their ability to speak English, but did not perceive themselves as less fluent in their ability to read and write in English over students whose parents were both born in Canada.** Summary tables of the results for research question 6 can be found on page 251 of Appendix K.

3.7 **Research Question 7**

Research Question 7: Does a Vanier College hard technology student's high school average have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Research Question 7 led to the development of seven hypotheses, relating high school average to the ability of the students to succeed in their English and/or Humanities courses. Although High-School-Average has been grouped into eight separate groups of five mark ranges, covering all possible passing ranges between 60% and 100%, the students in the sample only fit into five of the high school

average brackets. No student has a high school average of below 64.5% and no student has a high school average of above 89.5%. For analyses purposes, since there are more than two groups, independent-samples t-tests cannot be used, instead, one-way ANOVA tests must be used to test the hypotheses. A bar chart giving the number and percentages of students that fell into each of the valid high school average categories is shown below.

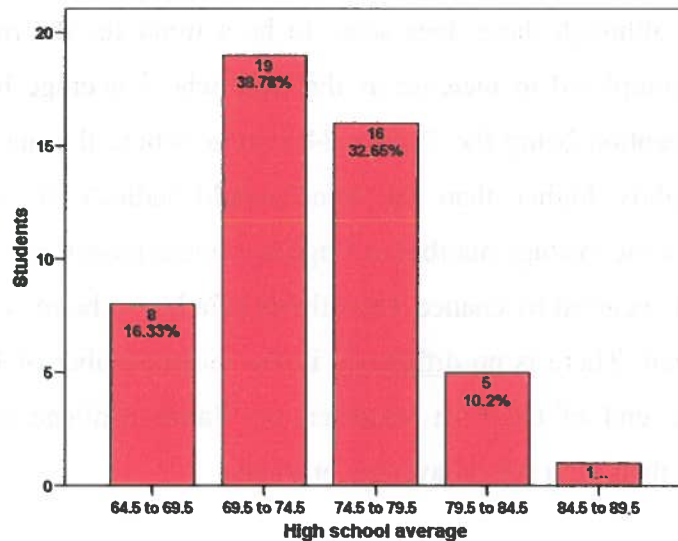


Figure 4: Student Division by High School Averages

Note that the majority of the students actually fall into the two high school average brackets between 69.5% and 79.5%, and only one student had an average of between 84.5% and 89.5%. Since not all students completed their high school in Quebec, high school averages were not available for all students and in fact were only available for 48 of the 60 students in the sample.

3.7.1 Hypothesis H7a

For hypothesis H7a: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those

students that are in a lower high school average bracket, the result found using the students' high school average brackets as the independent variable, the mean number of English courses passed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 1.091$ & $p = 0.373$) in the number of English courses completed by students by the end of the fifth semester based on their high school average brackets (64.5 to 69.5 range: $\bar{x} = 2.00$, 69.5 to 74.5 range: $\bar{x} = 2.58$, 74.5 to 79.5 range: $\bar{x} = 2.75$, 79.5 to 84.5 range: $\bar{x} = 3.20$ & 84.5 to 89.5 range: $\bar{x} = 3.00$), although there does seem to be a trend for the mean number of English courses completed to increase as the high school average bracket range is increased, the exception being the 79.5 to 84.5 range where the number of courses completed is slightly higher than the trend would indicate it should be. This difference between the average number of English courses passed is not considered to be significant and occurred by chance. Hypothesis H7a has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses completed by the end of the fifth semester, by Vanier College hard technology students based on their high school average brackets.

The bar chart for the mean number of English courses completed by the students, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7a can be found in Appendix L, page 253.

3.7.2 Hypothesis H7b

For hypothesis H7b: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are in a lower high school average bracket, the result found using the students' high school average brackets as the independent variable, the mean number of English courses failed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 1.251$ & $p = 0.303$) in the number of English courses

failed by students by the end of the fifth semester based on their high school averages (64.5 to 69.5 range: $\bar{x} = 1.38$, 69.5 to 74.5 range: $\bar{x} = 0.95$, 74.5 to 79.5 range: $\bar{x} = 1.12$, 79.5 to 84.5 range: $\bar{x} = 0.00$ & 84.5 to 89.5 range: $\bar{x} = 0.00$), although the students in the two higher high school average brackets did not fail any English courses while those in the three lower high school average brackets did. Any differences between the average number of English courses failed is not considered to be significant and occurred by chance. Hypothesis H7b has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses failed by the end of the fifth semester, by Vanier College hard technology students based on their high school average brackets.

The bar chart for the mean number of English courses failed by the students, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7b can be found in Appendix L, page 254.

3.7.3 *Hypothesis H7c*

For hypothesis H7c: A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required English courses by the end of the fifth semester than will those students that are in a lower high school average bracket, the independent variable is the high school average bracket and dependent variable is the mean of the data representing the percentage of the students in each high school average bracket that have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS one-way ANOVA looks for differences between the mean number of students (which in this case, based on 1 = 100%, represents the percentage of students) in each high school average bracket that have English courses remaining at the end of their fifth semester. The result was there

is no significant difference ($f = 1.017$ & $p = 0.409$) between the percentage of students in each high school average bracket (64.5 to 69.5 range: $\bar{x} = 1 - 1.00 = 0.00$ (0.0%), 69.5 to 74.5 range: $\bar{x} = 1 - .0684 = 0.316$ (31.6%), 74.5 to 79.5 range: $\bar{x} = 1 - 0.688 = 0.312$ (31.2%), 79.5 to 84.5 range: $\bar{x} = 1 - 0.600 = 0.400$ (40.0%) & 84.5 to 89.5 range: $\bar{x} = 1 - 1.00 = 0.00$ (0.0%)) who have completed all of their English courses by the end of the fifth semester. Any differences between the percentage of students that have completed all of their English courses by high school average is not considered to be significant and occurred by chance. Hypothesis H7c is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their English courses by the end of the fifth semester, based on their high school average brackets.

Examining the data shows no clear trend with all the students in the lowest and the single student in the highest high school average brackets not completing all of their required English courses by the end of the fifth semester and varying numbers in-between. The bar chart for the percentage of students with English courses left at the end of their fifth semester, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7c can be found in Appendix L, page 255.

3.7.4 *Hypothesis H7d*

For hypothesis H7d: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket, the result found using the students' high school average brackets as the independent variable, the mean number of Humanities courses passed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 0.467$ & $p = 0.759$) in the number of Humanities courses completed by students by the end of the fifth semester based on their high school averages (64.5 to 69.5 range: $\bar{x} = 1.88$, 69.5 to

74.5 range: $\bar{x} = 1.79$, 74.5 to 79.5 range: $\bar{x} = 2.12$, 79.5 to 84.5 range: $\bar{x} = 2.40$ & 84.5 to 89.5 range: $\bar{x} = 2.00$). The differences between the average number of Humanities courses completed is not considered to be significant and occurred by chance. Hypothesis H7d has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses completed by the end of the fifth semester, by Vanier College hard technology students based on their high school average brackets.

The bar chart for the mean number of Humanities courses completed by the students, categorised by high school average brackets, and the SPSS table for the ANOVA chart for H7d can be found in Appendix L, page 256.

3.7.5 Hypothesis H7e

For hypothesis H7e: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket, the result found using the students' high school average brackets as the independent variable, the mean number of Humanities courses failed as the dependent variable, and the SPSS one-way ANOVA test is that there is no significant difference ($f = 0.647$ & $p = 0.632$) in the number of Humanities courses failed by students by the end of the fifth semester based on their high school averages (64.5 to 69.5 range: $\bar{x} = 0.375$, 69.5 to 74.5 range: $\bar{x} = 0.579$, 74.5 to 79.5 range: $\bar{x} = 0.438$, 79.5 to 84.5 range: $\bar{x} = 0.00$ & 84.5 to 89.5 range: $\bar{x} = 0.00$), although the students in the two higher high school average brackets did not fail any Humanities courses while those in the three lower high school average brackets did. These differences between the average numbers of Humanities courses failed are not considered to be significant and occurred by chance. Hypothesis H7b has to be rejected and the null hypothesis accepted: There is no difference in the mean number

of Humanities courses failed by the end of the fifth semester, by Vanier College hard technology students based on their high school average brackets.

The bar chart for the mean number of Humanities courses failed by the students, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7e can be found in Appendix L, page 257.

3.7.6 Hypothesis H7f

For hypothesis H7f: A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are in a lower high school average bracket, the independent variable is the high school average bracket and dependent variable is the mean of the data representing the percentage of the students in each high school average bracket that have not completed all of their required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any Humanities courses left, a 1 is entered into that data cell. The SPSS one-way ANOVA looks for differences between the mean number of students (which in this case, based on $1 = 100\%$, represents the percentage of students) in the each high school average bracket who have Humanities courses remaining at the end of their fifth semester. The result was there is no significant difference ($f = 0.438 \Rightarrow p = 0.780$) between the percentage of students in each high school average bracket (64.5 to 69.5 range: $\bar{x} = 1 - 0.750 = 0.250$ (25.0%), 69.5 to 74.5 range: $\bar{x} = 1 - 0.526 = 0.474$ (47.4%), 74.5 to 79.5 range: $\bar{x} = 1 - 0.625 = 0.375$ (37.5%), 79.5 to 84.5 range: $\bar{x} = 1 - 0.600 = 0.400$ (40.0%) & 84.5 to 89.5 range: $\bar{x} = 1 - 1.00 = 0.00$ (0.0%)) who has completed all of their Humanities courses by the end of the fifth semester. Any differences between the percentage of students that have completed all of their Humanities courses by high school average is not

considered to be significant and occurred by chance. Hypothesis H7f is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their Humanities courses by the end of the fifth semester, based on their high school average brackets.

Examining the data shows no clear trend with students in all high school average brackets having Humanities courses to complete, including the single student in the upper high school average bracket. The bar chart for the percentage of students with Humanities courses left at the end of their fifth semester, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7f can be found in Appendix L, page 258.

3.7.7 Hypothesis H7g

For hypothesis H7g: Vanier College hard technology students who are in a higher high school average bracket, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses than will those students that are in a lower high school average bracket, the result found using the students' high school average brackets as the independent variable, the mean number of English and Humanities courses left to complete as the dependent variable, and SPSS one-way ANOVA test is that there is a no significant difference ($f = 0.748$ & $p = 0.565$) in the average number of combined English and Humanities courses left to complete by the students based on their high school averages (64.5 to 69.5 range: $\bar{x} = 3.12$, 69.5 to 74.5 range: $\bar{x} = 2.58$, 74.5 to 79.5 range: $\bar{x} = 2.12$, 79.5 to 84.5 range: $\bar{x} = 1.40$ & 84.5 to 89.5 range: $\bar{x} = 2.00$). Hypothesis H7g has to be rejected and the null hypothesis accepted: There is no difference in the mean number of combined English and Humanities courses left to complete after the students have completed all of their program professional courses, by Vanier College hard technology students based on their high school average brackets.

A trend of having fewer courses on average to complete was apparent for the lower four high school average brackets, but was not followed by the single student in the highest high school average bracket. The bar chart for the mean number of English and Humanities courses left to complete by the students, categorised by high school average brackets, and the SPSS table for the one-way ANOVA for H7g can be found in Appendix L, page 259.

3.7.8 *Summary for Research Question 7*

In the case of Research Question 7: Does a Vanier College hard technology student's high school average have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe? none of the seven hypotheses was found to be valid. In all cases the null hypotheses had to be accepted **and no measurable association between a Vanier College hard technology student's high school average and their ability to succeed in their English and Humanities courses was found.** Since there was only one student in the highest high school average bracket achieved (84.5 to 89.5) the statistical tests were also run with this student removed from the data, in case his or her results were an anomaly, and similar results were achieved with no significant differences found between any of the factors studied in research question 7 for any of the hypotheses. A summary ANVOA table for research question 7 can be found in Appendix L on page 260.

3.8 **Research Question 8**

Research Question 8: Does a Vanier College hard technology student's English course placement level have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Research Question 8 led to the development of seven hypotheses, relating English placement level to the ability of the students to succeed in their English and/or Humanities courses. A first time college student entering into Vanier has to take an English placement test. Depending on the test results, the students that succeed are placed into one of four first level English courses. The weakest students are placed in the 603-001-06 Preparation for College English course and the students that achieve the highest placement level are placed in the 603-101-30 Introduction to College English course. The majority of the students in this study were placed in the higher of the two intermediate level courses, 603-101-31 Literature and Composition. A bar chart giving the number and percentage placement level of the students is shown below.

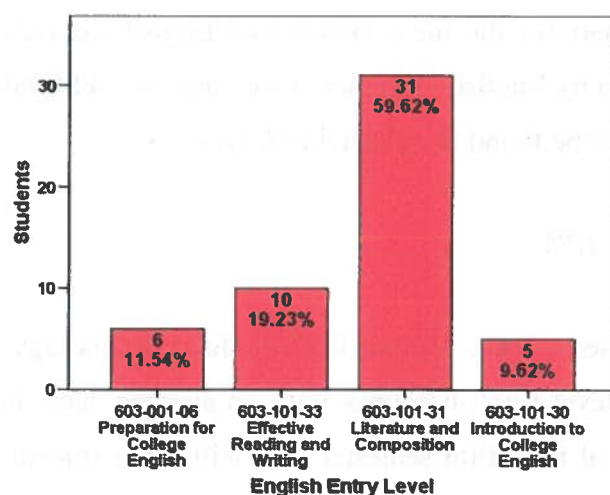


Figure 5: Student Division by English Placement Course Level

3.8.1 Hypothesis H8a

For hypothesis H8a: Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students who are placed in lower level English courses, the result found using the students' initial English placement level as the independent variable, the mean

number of English courses passed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 2.009$ & $p = 0.125$) in the number of English courses completed by a student by the end of the fifth semester based on his or her initial English course placement (603-001-06: $\bar{x} = 1.83$, 603-101-33: $\bar{x} = 3.00$, 603-101-31: $\bar{x} = 2.49$ & 603-101-30: $\bar{x} = 2.60$), although students in the lowest placement level did complete noticeably fewer English courses than those in the other three placement levels, the difference is not significant and is only due to chance. Hypothesis H8a has to be rejected and the null hypothesis accepted: There is no difference in the mean number of English courses completed by the end of the fifth semester, by Vanier College hard technology students based on their initial English Placement level.

The bar chart for the mean number of English courses completed by the students, categorised by English placement level, and the SPSS table for the one-way ANOVA for H8a can be found in Appendix M, page 262.

3.8.2 *Hypothesis H8b*

For hypothesis H8b: Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are placed in lower level English courses, the result found using the students' initial English placement level as the independent variable, the mean number of English courses failed as the dependent variable, and the SPSS one-way ANOVA test is that there is a significant difference ($f = 3.974$ & $p = 0.013$) in the number of English courses failed, on average, by a student by the end of the fifth semester based on his or her initial English placement level (603-001-06: $\bar{x} = 2.17$, 603-101-33: $\bar{x} = 0.60$, 603-101-31: $\bar{x} = 0.71$ & 603-101-30: $\bar{x} = 0.40$). It is obvious from examining the data that in this sample, those students placed in the first or lowest level of English course fail, on average, at least three times as many English courses by the end of the fifth

semester as did those students placed in any of the other English course levels, while those placed in the highest level fail, on average, the fewest number of English courses. **Hypothesis H8b can be accepted as true.**

The bar chart for the mean number of English courses failed by the students, categorised by English placement level, and the SPSS table for the one-way ANOVA for H8b can be found in Appendix M, page 263.

3.8.3 *Hypothesis H8c*

For hypothesis H8c: A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed all of their required English courses by the end of the fifth semester than will those students that are placed in lower level English courses, the independent variable is the initial English placement level and dependent variable is the mean of the data representing the percentage of the students in each English placement level that have not completed all of their required English courses by the end of their fifth semester. If a student has completed all of his or her English courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any English courses left, a 1 is entered into that data cell. The SPSS one-way ANOVA looks for differences between the mean number of students (which in this case, based on 1 = 100%, represents the percentage of students) in the each English placement level that have English courses remaining at the end of their fifth semester. The result was there is no significant difference ($f = 0.093$ & $p = 0.964$) between the percentage of students in each English placement level (603-001-06: $\bar{x} = 1 - 0.667 = 0.333$ (33.3%), 603-101-33: $\bar{x} = 1 - 0.700 = 0.300$ (30.0%), 603-101-31: $\bar{x} = 1 - 0.613 = 0.387$ (38.7%) & 603-101-30: $\bar{x} = 1 - 0.600 = 0.400$ (40.0%)), who have completed all of their English courses by the end of the fifth semester. Any differences between the percentage of students that have completed all of their English courses by placement level is not considered to be significant and occurred by chance. Hypothesis H8c is

rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their English courses by the end of the fifth semester, based on their initial level of English Placement.

The bar chart for the percentage of students with English courses left at the end of their fifth semester, categorised by English placement level, and the SPSS table for the one-way ANOVA for H8c can be found in Appendix M, page 264.

3.8.4 *Hypothesis H8d*

For hypothesis H8d: Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses, the result found using the students' initial English placement level as the independent variable, the mean number of Humanities courses passed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 0.560$ & $p = 0.644$) in the number of Humanities courses completed by a student by the end of the fifth semester based on his or her English placement level (603-001-06: $\bar{x} = 2.00$, 603-101-33: $\bar{x} = 2.00$, 603-101-31: $\bar{x} = 2.29$ & 603-101-30: $\bar{x} = 1.80$). The differences between the average number of Humanities courses passed is not considered to be significant and occurred by chance. Hypothesis H8d has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses completed by the end of the fifth semester, by Vanier College hard technology students based on their initial English placement level.

The bar chart for the mean number of Humanities courses completed by the students, categorised by initial English placement level, and the SPSS table for the ANOVA chart for H8d can be found in Appendix M, page 265.

3.8.5 Hypothesis H8e

For hypothesis H8e: Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses, the result found using the students' initial level of English placement as the independent variable, the mean number of Humanities courses failed as the dependent variable, and the SPSS one-way ANOVA test is that there is a no significant difference ($f = 0.601$ & $p = 0.618$) in the number of Humanities courses failed by a student by the end of the fifth semester based on his or her English placement level (603-001-06: $\bar{x} = 0.333$, 603-101-33: $\bar{x} = 2.00$, 603-101-31: $\bar{x} = 0.300$ & 603-101-30: $\bar{x} = 0.419$), although none of the students placed in the highest level English failed any Humanities courses. These differences between the average number of Humanities courses failed are not considered to be significant and occurred by chance. Hypothesis H7b has to be rejected and the null hypothesis accepted: There is no difference in the mean number of Humanities courses failed by the end of the fifth semester, by Vanier College hard technology students based on their initial English placement level.

The bar chart for the mean number of Humanities courses failed by the students, categorised by initial English placement level, and the SPSS table for the one-way ANOVA for H8e can be found in Appendix M, page 266.

3.8.6 Hypothesis H8f

For hypothesis H8f: A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are placed in lower level English courses, the independent variable is the initial English placement level and the dependent variable is the mean of the data

representing the percentage of the students in each placement level that have not completed all of their required Humanities courses by the end of their fifth semester. If a student has completed all of his or her Humanities courses by the end of the fifth semester a 0 is entered into the SPSS data cell and if the student has any Humanities courses left, a 1 is entered into that data cell. The SPSS one-way ANOVA looks for differences between the mean number of students (which in this case, based on 1 = 100%, represents the percentage of students) in the each placement level that have Humanities courses remaining at the end of their fifth semester. The result was there is no significant difference ($f = 0.844$ & $p = 0.476$) between the percentage of students in each placement level (603-001-06: $\bar{x} = 1 - 0.500 = 0.500$ (50.0%), 603-101-33: $\bar{x} = 1 - 0.700 = 0.300$ (30.0%), 603-101-31: $\bar{x} = 1 - 0.419 = 0.581$ (58.1%) & 603-101-30: $\bar{x} = 1 - 0.600 = 0.400$ (40.0%)) who have completed all of their Humanities courses by the end of the fifth semester. Examining the data shows no clear trend with students in all English placement levels having Humanities courses to complete. Any differences is not considered to be significant and occurred by chance. Hypothesis H8f is rejected and the null hypothesis accepted: There is no difference in the percentage of Vanier College hard technology students who have completed all of their Humanities courses by the end of the fifth semester, based on their initial English placement level.

The bar chart for the percentage of students with Humanities courses left at the end of their fifth semester, categorised by initial English placement level, and the SPSS table for the one-way ANOVA for H8f can be found in Appendix M, page 267.

3.8.7 Hypothesis H8g

For hypothesis H8g: Vanier College hard technology students who are placed in a higher level English course, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses than will those students that are placed in lower level

English courses, the result found using the students' initial English placement level as the independent variable, the mean number of English and Humanities courses left to complete as the dependent variable, and SPSS one-way ANOVA test is that there is a no significant difference ($f = 0.479$ & $p = 0.698$) in the average number of combined English and Humanities courses left to complete by the students based on their English placement level (603-001-06: $\bar{x} = 2.50$, 603-101-33: $\bar{x} = 2.00$, 603-101-31: $\bar{x} = 1.74$ & 603-101-30: $\bar{x} = 2.60$). Hypothesis H8g has to be rejected and the null hypothesis accepted: There is no difference in the mean number of combined English and Humanities courses left to complete after the students have completed all of their program professional courses, by Vanier College hard technology students based on their initial English placement level.

The bar chart for the mean number of English and Humanities courses left to complete by the students, categorised by initial English placement level, and the SPSS table for the one-way ANOVA for H8g can be found in Appendix M, page 268.

3.8.8 *Summary for Research Question 8*

In the case of Research Question 8: Does a Vanier College hard technology student's English course placement level have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe? only one of the seven hypotheses was found to be valid. **Students who are initially placed in the lowest level College English course fail more courses than students placed in any of the other English courses.** In the case of the other six hypotheses the null hypotheses had to be accepted **and no measurable association between a Vanier College hard technology student's English placement level and these six hypotheses could be found.** A summary ANOVA table for research question 8 can be found in Appendix M on page 269.

4. DISCRIMINANT ANALYSIS

As a method of triangulating the SPSS analyses results obtained with Kruskal-Wallis test, Independent-Sample t-test and the One-Way ANOVA tests, discriminant analyses were performed on similar data. In discriminant analysis a linear function is calculated to find the best combination which best distinguishes between two or more categorical situations. Each of the seven main dependent variables related directly to the students success in their English and Humanities courses (Table 5 below) were examined in turn, using SPSS discriminant analyses to generate a Structured Correlation Matrix.

Table 5
Descriptive Statistics of Dependent Variables Related to
English and Humanities Success

	N	Minimum	Maximum	Mode	Mean
Number of English completed	60	1	4		2.78
Number of English failed	60	0	4		0.82
Number of Humanities completed	60	0	3		2.08
Number of Humanities failed (0 to 3)	60	0	3		0.38
Combined English & Humanities left after 5 th semester	60	0	6		2.05
Humanities left after 5 th semester	60	0 = no	1 = yes	1 (53.3 %)	
English left after 5 th semester	60	0 = no	1 = yes	1 (65.0%)	

Each of the Matrices was examined, in turn to see if the correlations between that dependent variable being tested and the independent variables supported the results found in the original analyses. Although when the hypotheses were examined, only six main independent variables were used in the original analyses, when doing the discriminate analyses five more variables were added to the list to see if variables not previously considered may have had strong correlations to the dependent variables. This difference is reflected in number of independent variables listed in the Discriminate Structured Matrices found in Appendix O.

4.1 Number of English Completed

When the dependent variable, Number of English Courses Completed by the End of the Fifth Semester is examined using discriminant analysis, a correlation of 1.000 is found with two of the independent variables, Father Born in Canada and Both Parents Born in Canada. Strong correlations are also found with the independent variables Mother Born in Canada (0.827) and the Both Parents Born Outside Canada (-0.793). All of these variables can be grouped into acculturation or cultural background. Although when the hypotheses were tested, there was no significant link found between any of the original independent variables and the dependent variable Number of English Completed, the independent variable with the lowest significant factor ($\rho = 0.101$) was Both Parents Born in Canada (H5h). Thus the results of the discriminant analysis does support that the strongest link to the Number of English Completed is the Parents' place of birth (Summary Table – Appendix N, page 271, H5h), although the link is not considered to be significant in the original tests. The Discriminant Analysis Structured Matrix for the dependent variable Number of English Completed can be found in Appendix O, page 273.

Note that the variables of Father Born in Canada, Mother Born in Canada and Both Parents Born Outside Canada were not tested in the original hypotheses as they were deemed to be related to one another and to the tested variable Both Parents Born in Canada.

4.2 Number of Humanities Completed

When the dependent variable, Number of Humanities Courses Completed by the end of the fifth semester is analysed using discriminant analysis, no Discriminant Structured Matrix is generated since in the first entry analysis there were no f -factors with a significance of less than $\rho = 0.050$ found. Two independent variables have a significance of exactly $\rho = 0.050$ though, Father Born in Canada and Both Parents

Born in Canada. The table generated for the Number of Humanities Completed can be found in Appendix O, page 273.

Although the discriminate analysis is not completed the first entry analysis indicates that the independent variables that have the strongest link to the Number of Humanities Courses Completed are again culturally related, specifically the parents' place of birth. These results support what is found in the hypothesis testing where the independent variable with the lowest significant value, ($\rho = 0.056$) is found for hypothesis H5k, Parents' Place of Birth (Both Canada or Not-Both Canada) (Summary Table - Appendix N, page 271, H5k).

4.3 Number of English Failed

Discriminant analysis of the dependent variable, Number of English Courses failed by end of the Fifth Semester resulted in a correlation of 1.000 with the independent variable English Entry Level. This correlation supports the results of the testing of Hypothesis H8b, where there was a significant difference in the number of English Courses Failed on average, by a student by the end of the fifth semester based on their initial English Placement (or Entry) level.

The subsequent four variables listed in the Structured Matrix; Primary Home Language, Years in Canada, Both Parents Born Outside Canada and Mother Born in Canada; are all relatively equivalent in their correlation with values between 0.415 and 0.434 (\pm). These four independent variables are all directly related to language and/or acculturation. None of the four was found to be significant in the earlier analyses although, in the testing of hypothesis H5i, a significant difference was found in the number of English courses failed, on average by students categorised by Parent's place of birth, Both-in-Canada or Not-Both-in-Canada, each parent was not tested separately.

The Discriminant Analysis Structured Matrix for the dependent variable Number of English Failed can be found in Appendix O, page 274.

4.4 Number of Humanities Failed

When the dependent variable, Number of Humanities Courses Failed by the end of the fifth semester is tested, no Discriminant Structured Matrix is generated since in the first entry analysis there are no f -factors with a significance of less than $p = 0.050$. The lowest significant value for any f -factor, $p = 0.071$, was found for Mother Born in Canada. Although this variable was not considered in the earlier testing, it is one of two independent variables involved in the Both Parents Born in Canada (yes, no) independent variable and it should be noted that there was a highly significant difference found in the mean number of Humanities courses failed by the two groups of students categorised by parents' place of birth (Born-in Canada & Not-Born-in-Canada). The table generated for the Number of Humanities Completed can be found in Appendix O, page 274.

4.5 Expected English Left After the Fifth Semester

When the dependent variable, Expected English Left after the Fifth Semester, is tested using discriminate analysis, a correlation of 1.000 is found with both the independent variables Father Born in Canada and Both Parents Born in Canada. The third and fourth strongest correlations (0.802) are with the Mother Born in Canada and Both Parents Born Outside of Canada (-0.759). All four of these factors are directly related to parents' place of birth and therefore acculturation. In earlier testing of hypotheses related to whether the students had completed all their English courses by the end of the fifth semester, only hypothesis H5j, was found to be significant. Effectively, a significant difference was found between the percentage of students that have completed all of their English courses by the end of the fifth semester based on whether their parents were both-born-in-Canada or not-both-born-in-Canada. This

is supported by the discriminant analysis results. The Discriminant Analysis Structured Matrix for the dependent variable Number of English Left After the 5th Semester can be found in Appendix O, page 275.

Two of the variables, Father Born in Canada and Mother Born in Canada are factors involved in the Both Parents Born in Canada independent variable and were not previously tested individually, nor was the independent variable Both Parents Born Outside Canada previously tested.

4.6 Expected Humanities Left After the Fifth Semester

When the dependent variable, Expected Humanities Left after the Fifth Semester, is tested using discriminant analysis, a correlation of 1.000 is found with the independent variables Father Born in Canada and Both Parents Born in Canada. The third and fourth strongest correlations (0.822) are with the Mother Born in Canada and Both Parents Born Outside of Canada (-0.757). All four of these factors are directly related to parents' place of birth and therefore acculturation.

In earlier testing of hypotheses related to whether the students had completed all their English courses by the end of the fifth semester, only hypothesis H5m, was found to be significant. A significant difference was found between the percentage of students that have completed all of their Humanities courses by the end of the fifth semester based on whether their parents were both-born-in-Canada or not-both-born-in-Canada. Two other variables, Father Born in Canada and Mother Born in Canada are factors involved in the Both Parents Born in Canada independent variable and were not previously tested individually, nor was the independent variable Both Parents Born Outside Canada previously tested. The Discriminant Analysis Structured Matrix for the dependent variable Number of Humanities Left After the 5th Semester can be found in Appendix O, page 275.

4.7 Combined English and Humanities Left After the Fifth Semester

When the dependent variable, Combined English and Humanities Left after the Fifth Semester, is examined, a correlation of 1.000 is found with the independent variables Father Born in Canada and Both Parents Born in Canada. The third and fourth strongest correlations (0.811) are with the Mother Born in Canada and Both Parents Born Outside of Canada (-0.770). All four of these factors are directly related to parents' place of birth and therefore acculturation. In earlier testing of hypotheses related to the combined number of English and Humanities courses left after the end of the fifth semester, only hypothesis H5n was found to be significant. A significant difference was found between the total number of English and Humanities courses remaining after the fifth semester based on whether their parents were both-born-in-Canada or not-both-born-in-Canada. Two of the other variables mentioned above, Father Born in Canada and Mother Born in Canada are factors involved in the Both Parents Born in Canada independent variable and were not previously tested individually, nor was the independent variable Both Parents Born Outside Canada previously tested. The Discriminant Analysis Structured Matrix for the dependent variable Combined English and Humanities Left After the 5th Semester can be found in Appendix O, page 276.

CHAPTER FIVE

DISCUSSION

1. OVERVIEW

The intent of this research was to discover if there was any significant measure of association between students' primary home language, family cultural background, secondary school language of instruction, and/or English entry placement course level and the likelihood of them successfully completing their English and/or Humanities courses within the three years of their technical Program. High school averages were also included in the research in order to verify that they were not the only predictors of success. The research focused on fifth semester hard technology students registered in the Building Systems, Computer and Digital Systems, Computer Science, and Industrial Electronics Engineering Technology Programs at Vanier College. The personal research data was gathered from the students through a questionnaire (survey) and the academic data from Vanier College.

2. PROBLEMS

2.1 Instrument Validity

There were no apparent problems with validity in the sections of the survey used in this research. The survey questions relating to cultural background and language usage could not easily be misconstrued and required only that the student have some knowledge of his or her familial cultural and language background and current language status.

The survey section where validity might be questionable was the section where the students were asked to rate the difficulty of working in the English language and in English and Humanities courses using a Likert scale (Appendix A, page 177). In this case, of the eight questions related to language difficulty, only two were used for interrelated reliability verification (questions two and eight). For questions one to six answering using the left hand side of the Likert scale (always, almost always, sometimes, rarely, never or agree, somewhat agree, sometimes, somewhat disagree, disagree) implied that the student had difficulty with either the English language or with English and Humanities courses, giving a strong bias to the way the questions were formatted, which could lead to a particular response set by the respondents. For questions seven and eight the right hand side implied language difficulty and question nine was related to scheduling difficulties. Question two and eight were the negative of one another and for the results to be considered reliable, the student answering the survey would have had to give the opposite answer to these two questions. Since the data gathered in this section was not used for this research, any validity problems related to question bias did not affect any of the analyses and/or results realised in this paper.

The data gathered from the College: program planners, transcripts, high school marks (see samples in Appendix D) and English Placement Level, was all quantitative and there were no obvious validity problems associated with this data.

2.2 Sample

The sample used in the study, as stated earlier, was a convenience sample that consisted of the 60 Vanier College hard technology students who completed the survey and consent forms, and who met the research requirements. Unfortunately at the time the survey was done, registration in the Vanier College hard technology programs was at its lowest level in many years. Because of the low number of subjects and the small participant numbers in both the French and/or Other language

categories for specific questions such as primary home language and high school language of instruction, the language categories were reduced from three (English, French, Other) to two (English, Not-English) for analyses purposes. Another factor that should be taken into account is that Vanier College is considered to be the most multicultural CEGEP in Quebec and it is unique in that the majority of the students registered at the College do not come from the same language background as the language of instruction at the college. For these reasons this research can only be considered valid for this particular research population at this specific college.

3. RESULTS

From the literature review and from observations made as a teacher in a hard technology program at Vanier College, eight research questions were developed for this research. These questions lead to a total of fifty-four hypotheses. Of the fifty-four hypotheses analysed, in fourteen cases the results supported the hypotheses, in the forty other cases the null hypotheses had to be accepted. A summary table of results is given in Appendix N, page 271.

The research questions can be divided into two separate categories. In the first category the data is analysed for a significant measure of association between the students' ability to succeed in their English and Humanities courses and the independent variables. In the second category, the data is analysed for a significant measure of association between the students' rating of their ability to speak, read and write English and the independent variables. Research Questions 1, 3, 5, 7 and 8 are in the first category and research questions 2, 4 and 6 are in the second category.

Initial analyses were done on the data using independent sample t-tests, one-way ANOVA tests or the Kruskal-Wallis tests for K-Independent samples, depending on the characteristics of the independent variable. A second set of analyses was done on the same data using discriminant analyses to generate Structured Matrices. The

purpose of doing two different types of analyses on the same data was to triangulate the results. If the results of the discriminant analyses supported the original analyses results than there was a stronger chance that in these cases, any positive results were significant. Triangulation was done only to the questions/hypotheses that were in the first category.

3.1 Initial Analyses Results – Category 1 Research Questions

Initial analyses were done on the data for research questions 1, 3, 5, 7 and 8 using independent sample t-tests and one-way ANOVA tests depending on the characteristics of the independent variable.

3.1.1 *Primary Home Language and High School Language of Instruction*

Previous research has shown a significant association between students' primary home language, schooling in primary home language before schooling in a secondary language and length of schooling in primary and secondary language and their success in school at all levels (primary, secondary and post-secondary) and more specifically, between the language of their previous schooling and their success in post-secondary school (Collier, 1995; Myles, 2002; Saville-Toike, 1991). In this research no significant association was found between either students' primary home language or their high school language of instruction and their ability to succeed in their English and Humanities courses (Summary Table - Appendix N, page 271). No data was gathered on the language of their primary schooling and at what age they went from schooling in their primary home language to attending school in a secondary language. This might be a consideration for future research as some link has been found between students receiving early schooling in their primary language and developing cognitive ability in their primary language before or at the same time as continuing their education in a secondary language of instruction (Bournot-Trites and Tellowitz, 2002; Collier, 1995; Cummins (1979), Cummins (1994), Perozzi

(1995), Perozzi and Sanchez (1992) as cited in Buxton and Escamilla, 2000; Kockulah *et al*, 2005; Lutz, 2004; Singhal, 2004; Saville-Toike, 1991).

In Quebec, and especially in the English Colleges, there is a unique situation with respect to a student's primary home language, high school language of instruction and being educated in English at the College level. If at least one of the parents of a student has not had the majority of his or her primary education in English in Canada, the student must attend French primary and secondary school, unless they pay to go to a private school or are given an exemption. Exemptions are rare and are given in very specific situations. Two examples where exemptions are given are for children with learning disabilities whose first language is English and who are having difficulty in the French school system and for military or diplomatic personnel who are only in the province for a predetermined length of time and thus have special status. As a result, for the majority of first and second generation immigrants, even if their primary home language is English or their secondary home language is English, they cannot go to English primary and/or secondary school, but must attend school in French. At the college level the student can make a choice of going to a college where the language of instruction is English or a college (Cegep) where the language of instruction is French. Given this lack of choice at the earlier level of schooling, an English speaking first or second generation immigrant will virtually always have their pre-college education in French and will thus be disadvantaged in English and Humanities courses over an English Canadian whose pre-college education was in English. There will also now be two groups for English as a primary home language, those that attended English high school and those who attended French high school. This unique situation may be why neither primary home language nor high school language of instruction was found to be a predictor of success in English and Humanities courses.

3.1.2 *Cultural: Student's Place of Birth, Student's Parents' Place of Birth*

Research on acculturation has shown a link between a student's ability to succeed in school and his or her acculturation level, (Berry *et al*, 2006; Nekby *et al*, 2007; Nuñez and Gary, 2004; P. R. Portes 1999; Phinney, 1992). According to this research, students that have both adapted the local Anglo culture and have not abandoned their own cultural roots (integrated) tend to do better in English schooling. For this research, two factors were considered in assessing the student's cultural background, the student's place of birth and the student's parents' place of birth.

Students with at least one non-Canadian born parent would be raised in a household where they would be exposed to their parents' culture(s), especially when they were pre-schoolers, regardless of whether the students themselves were born in Canada or not. Thus it is the parents' place of birth that is the more significant indicator of the students' cultural background than the students' place of birth. When the analysis was done using the student's place of birth no significant measure of association was found between the student's place of birth and the likelihood of the student succeeding in his or her English and Humanities courses, on the other hand, when the analysis was done using the parents' place of birth (Both-born-in-Canada or Not-both-born-in-Canada) significance was found in five of the seven English and Humanities factors considered and the results were close to significant ($p = 0.056$) in a sixth. It is only with regards to the number of English completed, surprisingly, that there is no clear measure of association. In this area, the results are supported by the literature; acculturation does have an effect on the student's ability to succeed in his or her English and Humanities courses.

3.1.3 *High School Averages*

Previous research has consistently shown association between students' high school averages and their success in post-secondary level education (Zwick, 2007).

Based on these past results it was expected that high school averages would be one of the factors that could be used as a predictor of success in English and Humanities courses for the students in this research. This was not the case. No link was found between students' high school averages and their likelihood of completing their English and Humanities courses with their first 5 semesters of their program. A summary table can be found in Appendix N on page 271.

When considering these results, it is important to note that technology programs, in general, have lower academic entry requirements than do many other College level programs and the research sample cannot be considered representative of the College population. If an analysis were to be done to discover if high school average could be a predictor of success in the College or even within the programs themselves, as opposed to specific courses, the results might be different. Since overall success in the College, and overall success in the program were not examined, only success in specific courses, we can only conclude that high school average would not be a predictor of these students' chances of succeeding in the specific courses considered in this research, the English and Humanities courses.

3.1.4 *English Entry Placement Level*

As was mentioned earlier, all students entering Vanier College, except transfers from another college, have to take an English Entry Placement Level test. As a result of this test they can be placed in any one of three entry level college English courses or in a pre-college English course. Of the seven factors relating to English and Humanities courses examined, significance was only found with the number of English courses failed. Students who were placed in the pre-college English course failed significantly more English courses, on average, than students placed in any of the three other English courses, and in fact students placed in the pre-college English course failed at least three times as many English courses, on average, as did students placed in any of the three College entry level English courses. This

difference in means is significant enough that this information will be given to the Vanier College administration and it should warrant further investigation.

3.2 **Triangulation – Discriminant Tables – Category 1 Research Questions**

Discriminant analyses were run on the data of the first category of research question (1, 3, 5, 7 & 8) to triangulate to the initial analyses results. Five additional variables were tested in order to discover if variables not originally considered might be important for consideration in a future research project. Included in the extra variables was the place of birth of each of the parents (mother and father) separately from the general variable parents' place of birth (Both-in-Canada or Not-both-in-Canada).

In five of the seven discriminant analyses a Structured Matrix was generated. In two analyses, on the first pass-through no variable generated a significance of less than $p = 0.050$ and no Structured Matrix Tables were produced. The tables resulting from the discriminant analyses can be found in Appendix O. A summary table of the Discriminant Analyses can be found in Appendix P. Also included in the table are comments regarding the triangulation with the original analyses.

3.2.1 *Primary Home Language & High School Language of Instruction*

Primary home language only appears once in the top four correlating factors from the Structured Matrices generated. It is the second most significant correlating factor for the number of English courses failed with a correlating factor of -0.434 , which is not very strong. This supports the original independent sample t-test results where Primary home language did not have a significant measure of association with students' ability to succeed in their English and/or Humanities courses.

High school language of instruction does not appear in the top four in any of the structured Matrices generated. It is not considered a significant correlating factor for a student's likelihood of succeeding in English and/or Humanities courses. This again supports the original independent sample t-test results where High school language of instruction did not have any significant measure of association to students' ability to succeed in their English and Humanities courses.

3.2.2 *Cultural – Student's Place of Birth, Student's Parents' Place of Birth*

Student's place of birth does not appear in the top four correlating factors in any of the Structured Matrix Tables generated, nor was a student's place of birth associated with a student's likelihood of succeeding in his or her English and/or Humanities courses.

Conversely, in four of the five Structured Matrix Tables generated, parents' place of birth (Father born in Canada, Mother born in Canada and/or Both parents born in Canada) is strongly correlated to the students' success in the variables addressed, namely: the Number of English completed, All English completed by the end of the 5th semester, All Humanities completed by the end of the 5th semester and Combined English and Humanities courses left after the 5th semester. In all four cases the correlation factor is 1.000 for Father born in Canada and for Both parents born in Canada and between 0.802 and 0.827 for Mother born in Canada, very strong correlations. In the case of a fifth variable, Number of Humanities completed, no structured matrix is generated since no significance is less than $p = 0.050$ but, two of the independent variables in the table produced did have a significance of exactly $p = 0.050$, Father born in Canada and Both parents born in Canada which is similar to the independent t-test results where the chance of a significant measure of association between the mean Number of Humanities completed and Both Parents Born in Canada is $p = 0.056$.

For two of the variables studied, Number of English completed and Number of English failed the discriminant analyses results do not necessarily triangulate with the independent t-test results. For Number of English completed, the independent t-tests finds a no significant difference between the mean number of English courses completed according to parents' place of birth and the discriminant analyses finds a strong correlation between the number of English courses completed and parents' place of birth. For Number of English failed the opposite is true, the discriminant analyses places variables related to parents' place of birth as lower on the list of factors that correlate while the independent t-test finds that a significant difference between the mean number of English courses failed according to the parents' place of birth.

Although if we look at the overall results in terms of acculturation and parents' place of birth, the results of the discriminant analyses triangulate strongly with the results produced in the original analyses. Both the t-tests and the discriminant analyses indicate that this is the most significant factor in the likelihood of the students being successful in their English and Humanities courses.

3.2.3 *High School Averages*

High school average does not appear in the top four correlating factors in any of the Structured Matrix Tables generated, nor was high school average significantly associated to a student's likelihood of succeeding in his/her English and/or Humanities courses in the one-way ANOVA tests.

3.2.4 *English Entry Placement Level*

Discriminant analysis places English Entry Placement level as the most significant factor in the Number of English failed with a correlating factor of 1.000. This triangulates to ANOVA test results found in the original analyses where English Entry level was strongly correlated with the number of English courses failed

($p = 0.013$). According to both analyses, English Entry Placement level is the most significant factor involved in the number of English courses failed by students.

3.3 Initial Analyses Results – Category 2 Research Questions

For these questions, the dependent variables, the abilities to speak, read and write in English, are based on a ranking system not a measurement system and we thus cannot assume that there is equal variance between the values; the Kruskal-Wallis Test for K-Independent Samples was used to test for significant differences between the mean ranks selected for the different variables tested.

3.3.1 *Ability to Speak, Read & Write English*

Students' rating of their ability to speak English using a 4 point Likert scale (1 = I can understand a bit, 2 = I can make myself understood/understand, 3 = I am comfortable and 4 = I am fluent in this language) was very closely tied to their primary home language, high school language of instruction and cultural background (their place of birth and their parents' place of birth). Students whose primary home language is not English, who attended a high school where the language of instruction was not English and/or students who were, or whose parents were not born in Canada, on average rated themselves as significantly lower in their ability to speak English than students whose primary home language is English, students who attended a high school where the language of instruction was English and students whose cultural background is Canadian.

At the same time only students whose primary home language is not English and who were not born in Canada rate their ability to read and write English as significantly lower, on average than did those students whose primary home language is English or those students who were born in Canada, while students who attended a high school where the language of instruction was not English and students whose

parents were not both born in Canada did not rate themselves as significantly different, on average in their ability to read and write in English than students who attended a high school where the language of instruction was English or students whose parents were both born in Canada.

It is interesting to note that all students whose primary home language is English rated themselves as fluent (4) in speaking English but did not all rate themselves as fluent (4) in their reading and writing ability. From the results it is not clear whether the rating is as a result of the students' success or their lack of success in their English and Humanities courses or if students would rate themselves the same irregardless of their ability to complete their English and Humanities courses.

CHAPTER SIX

CONCLUSION

This research set out to investigate if there was a significant measure of association between Vanier College Hard Technology students' ability to complete English and Humanities courses and their primary home languages, secondary school languages of instruction, cultural backgrounds and/or English entry placement levels. High school averages were also examined in order to eliminate them as the main correlating variable.

1. PROBLEMS

There were a number of problems with the research, most specifically the small sample size. Currently Vanier College is experiencing a drop in enrolment in Hard Technology Programs and this has had an impact on the number of students available to participate in this research project (60 participants). The results of a preliminary research project completed three years previous to this research, with 79 participants, led the researcher to hypothesize that with a larger sample size there was a possibility of a significant measure of association between primary home language and the likelihood of success in English and/or Humanities courses. Because of the drop in enrolment numbers this hypothesis could not actually be tested here.

Another problem encountered due to the small number of participants, was that the original three language categories, English, French and Other had to be reduced to two language categories, English and Non-English. The original approach adopted by the researcher was that most native born Quebecers spoke either English

or French at home and that the majority of the Others would be from immigrant family backgrounds. Francophone Quebecers who choose to attend an English College would be doing so for a different reason than students from the Other language category and might take a different approach to their English and Humanities courses and thus the success rates might be different. This possibility could not be addressed due to the low enrolment, and the comparing of the likelihood of success in English and/or Humanities course for the three language groupings had to be reduced to comparing for two language groupings.

2. RESULTS

The results of this research appear to indicate that the most significant determining factor in a students' likelihood of completing his or her English and Humanities courses is whether his or her parents were both born in Canada or not both born in Canada. Students whose parents were both born in Canada tended to be significantly more successful, on average, than students whose parents were not both born in Canada. In the original testing no distinction was made on whether the mother, father or both parents were born outside of Canada. If the student had at least one parent born outside of Canada they were classified as Not-Both-Born-in-Canada. When the discriminant analyses was done on the data, as well as including both parents were born in Canada or not as a variable, each parent's place of birth was also included as a separate variable. The results of the discriminant analyses appear to indicate that of the two parents, the father's place of birth has a greater contribution to the student's ability to successfully complete his or her English and Humanities courses within the three years of the program than does the mother's place of birth (see Summary of Hypothesis Test Results, Appendix N, page 271 and Discriminant Analyses Summary table Appendix P, page 278).

Another and also equally important results was that students placed in the pre-college entry level English course tend to fail on average, at a minimum three

times as many English courses, as those placed in any of the three Entry level college English course. This fact alone is relevant enough that it will be brought to the attention of the relevant Vanier College authorities.

Also of important note was that students whose linguistic background (primary home language and high school language of instruction) is not English and whose cultural background is not Canadian rated themselves as significantly lower, on average, in their ability to speak English but did not rate themselves as significantly lower, on average, in their ability to read and/or write in English compared to students whose linguistic background was English and cultural background was Canadian.

3. RECOMMENDATIONS

One major recommendation would be for the College to analyse its records for the number of failures in English courses to discover if the results for the college as a whole are consistent with those results observed for the 5th semester Vanier College hard technology students. Do students whose placement test results indicate that they should be placed in the lowest level of College English fail, on average, more than three times as many English courses as do students placed in any other level of English? Whether the results are similar across the College or only exist in the hard technology programs, this is an area that needs to be addressed by the College and the English Curriculum Committee.

Although Vanier College offers many opportunities to students who need help with English through The Learning Center (TLC), such as free English tutoring, both a Conversation and Pronunciation Clubs that meet weekly to help L2 English students, English Exit Exam preparation workshops, help with essay writing etc. not enough of the students who need this help take advantage of these opportunities because either they don't know about them (although they are well advertised on

campus), they don't think they need the help until it is too late, or they do not think they have the time or are too shy to follow up on the help they need. What is not done is that once a student is identified as being weak, is to offer courses whose specific aim is to help students develop the academic language needed and the tacit skills they are missing and are not aware they are missing before they take even the lower level courses and fail. It is not only better skills in writing English these students need but they also need to be better prepared to take college level, culturally biased courses.

As discussed earlier, existing research into acculturation indicates that an integrated or biliterate student, one who is comfortable with and literate in both his or her minority and the majority culture, will be more successful in school (Berry *et al*, 2006; Lutz, 2004; Nekby *et al*, 2007). Students should be encouraged to maintain their cultural heritage and be proud of it while also being encouraged to participate in the majority culture, in this case the majority Anglo Quebec/Canadian culture.

In one sense Vanier College is very strong on promoting cultural awareness and acceptance. The College not only encourage students to participate in cultural activities but promotes multicultural and multiethnic related activities to the college community as a whole. Examples include celebrating Black History Month, a yearly series on the Holocaust, multicultural food fairs, multicultural fashion shows and multicultural variety shows (Night of Nations), among many others. In some cases participation in one or more of these cultural activities may be included as part of a course, such as attending a lecture or panel discussion related to Black History month or the Holocaust. In spite of this promotion and acceptance of the multicultural nature of Vanier College, self-segregation still exists at Vanier, similar to that which occurs at many other colleges. Students tend to group together according to their cultural/ethnic background during their breaks. As one indication of this, the different eating areas on the campus have specific nomenclatures related to ethnicity used by the students: the Black Caf, the Italian Caf, and the Asian Caf are examples of this. It is important for students to be proud of and not reject their cultural heritage, but not

to the exclusion of fitting into the wider society. The college should continue to look into ways of encouraging students to learn more about the wider Canadian and Quebec Anglo culture and to encourage students to become integrated into the college as a whole instead of into individual communities within the college.

4. FUTURE RESEARCH

One major concern with this research is the low sample size. For reasons explained earlier, including the type of courses taken within their program the sample was selected using very specific criteria, students in their 5th semester (or 6th semester provide only the 5th semester data was used) registered in Vanier College hard technology Programs. More reliable results might be obtainable for comparison, if the same research data was collected over a two or three year period for 5th semester Vanier College hard technology students, thus increasing the sample size. With small samples there is a greater risk of sample bias than with a larger sample.

Currently, at Vanier College, the other technology programs also have a similar problem as do the hard technology programs, with students not completing their English and Humanities courses within their three year program timeframe. A similar research project could be completed with other technology students to see if the problems, causes and effects, are similar. Because of significant differences in gender ratios in the different technology programs and differences in prerequisites high school courses and high school grades, these factors would have to be taken into consideration and addressed in any future research.

There was much more data collected than was used in this research project. Analysing all the data collected would have required too great a commitment, both in resources and time. Further research could examine the unused data and search for other significant links to students having difficulty completing their English and Humanities courses.

Although the results of this research did not find that primary home language and high school language of instruction were factors in the students successfully completing their English and Humanities course within the three years of their technology programs, further study that examines these two variables in combination with other variables such as parents place of birth might yield further cues to the reasons students are experiencing difficulty in completing their English and Humanities courses.

It is also important to note that the results found are worthy of further study. Acculturation is an important factor in a students' ability to be successful in higher education and is the topic of much on going research. Acculturation or at least parents' place of birth, in particular, father's place of birth, appears to be a significant factor in at least one aspect of Vanier College hard technology students' ability to succeed in completing their college degree within the standard three year technology program timeframe, their ability to complete their English and Humanities courses in a timely fashion.

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Technology Student Survey on Humanities and English

A number of technology students take more than six semesters to complete their Programs. Many of these students have completed all their Program Professional courses but not all of their English and Humanities courses.

The intent of this survey is to seek out factors that may be contributing to the delay in Technology students completing their Program, and in particular their English and Humanities courses within the standard three years of their Program.

Note that all data collected for the purpose of this research will be kept in the strictest confidence and all identifying material will be removed before any results are made public.

Section A

I _____ (print name) give permission for the data gathered in this survey to be used for the purpose of conducting research into the factors affecting the completion rates of English and Humanities courses. I understand that complete confidentiality will be maintained throughout the process of the research and afterwards.

(signature)

(date)

Section B

I _____ (print name) give permission for Vanier College to provide the researcher (Louise Robinson) with the available MELS - Ministère de l'Éducation, du Loisir et du Sports - (high school averages, and background information) and Vanier College background statistics and marks requested (transcript, program planner, English placement test and English exit test marks) in order to complete the research into factors affecting completion rates of English and Humanities courses. I understand that complete confidentiality will be maintained throughout the process of the research and afterwards.

(signature)

(date)

Background Information:

Student ID: _____

Gender: Male ☐ Female ☐

Program of Study: _____

Month and year you entered the program: _____ (mm/yyyy)

Circle the semester in which you are currently registered. Note: *If you are taking Program Professional courses from more than one semester, please circle all relevant semesters.*

1 2 3 4 5 6

For Students not born in Canada:

What year did you arrive to Canada? _____

What country did you come to Canada from? _____

What languages did you speak when you arrived (from most fluent to least)?

_____, _____, _____,

_____, _____, _____.

Was your mother born in Canada? _____. If not, what country? _____

Was your father born in Canada? _____. If not, what country? _____

Previous Education:

Post Secondary School(s)/Country (year to year)	Language of Instruction
Vanier College / Canada (month/year to current)	English
Secondary School(s) or Country (year to year)	Language of Instruction

English and Humanities Courses Statistics:

Number of Humanities courses passed as **Intensives**: 0 1 2 3

Number of English courses passed as **Intensives**: 0 1 2 3 4

Knowing that you require **4 English** courses, circle the number of English Courses you **expect** to **have left** after you have completed all your Program Professional Courses.

0 1 2 3 4

Knowing that you require **3 Humanities** courses, circle the number of Humanities Courses you **expect** to **have left** after you have completed all your Program Professional Courses.

0 1 2 3

English and Humanities Courses Ratings:

Circle the relevant number:

1. I find that reading in English is difficult for me.

1 2 3 4 5
always almost always sometimes rarely never

2. I find that writing in English is difficult for me.

1 2 3 4 5
always almost always sometimes rarely never

3. I find the work required in English courses is at too high a level.

1 2 3 4 5
always almost always sometimes rarely never

4. I find the work required in Humanities courses is at too high a level.

1 2 3 4 5
always almost always sometimes rarely never

5. The reading assignments in English and/or Humanities courses are too long (time wise).

1 2 3 4 5
always almost always sometimes rarely never

6. The writing assignments in English and/or Humanities courses are too long.

1 2 3 4 5
agree somewhat agree sometimes somewhat disagree disagree

7. I easily understand the material in the English and/or Humanities courses.

1 2 3 4 5
agree somewhat agree sometimes somewhat disagree disagree

8. I find that reading in English is easy for me.

1 2 3 4 5
always almost always sometimes rarely never

9. The program specific English and/or Humanities courses did not fit my schedule when I was supposed to take them.

1 2 3 4 5
agree somewhat agree sometimes somewhat disagree disagree

Opinion:

Write a brief paragraph on why (or why not) you see English and Humanities courses as an important part of the Technology Programs.

Blank lined paper with horizontal ruling lines.

Thank – you for your help and co-operation

Louise Robinson,
Industrial Electronics Department

Appendix B contains descriptive statistics bar charts for the data sets used in the study. The charts are arranged in two columns, with the first column containing charts for the data sets used in the first study and the second column containing charts for the data sets used in the second study.

APPENDIX B

DESCRIPTIVE STATISTICS BAR CHARTS

DESCRIPTIVE STATISTICS BAR CHARTS

The following bar charts are used to present a snapshot of the descriptive statistics of the 60 student sample. The upper number in each bar indicates the number of students in that grouping and the second number indicates what percentage of the total number of students this represents.

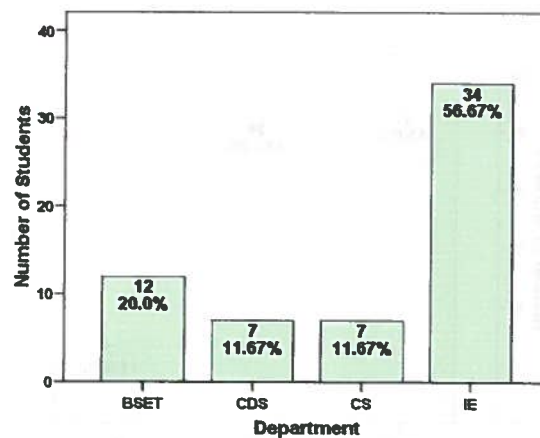


Figure 6: Distribution of Students Between the Four Vanier College Hard Technology Programs Included in this Study

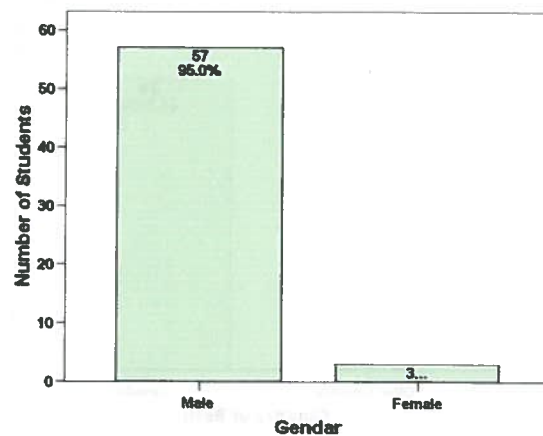


Figure 7: Distribution of Students by Gender

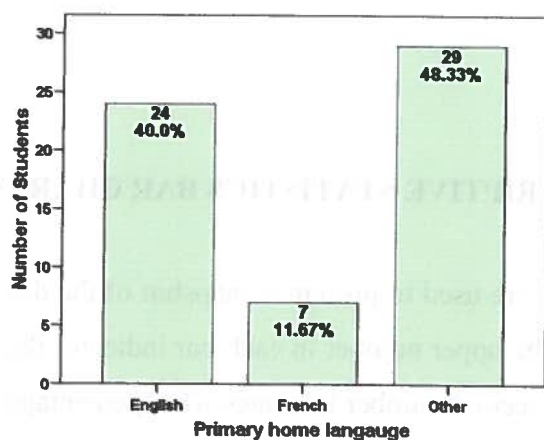


Figure 8: Distribution of Students by Primary Home Language

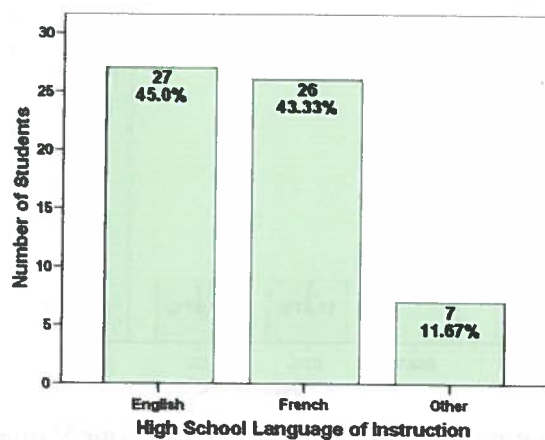


Figure 9: Distribution of Students by High School Language of Instruction

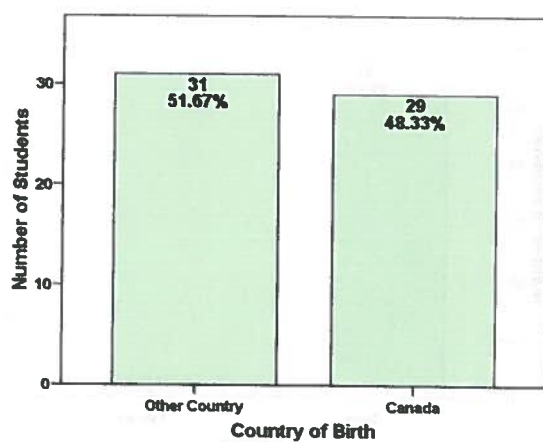


Figure 10: Distribution of Students by Country of Birth

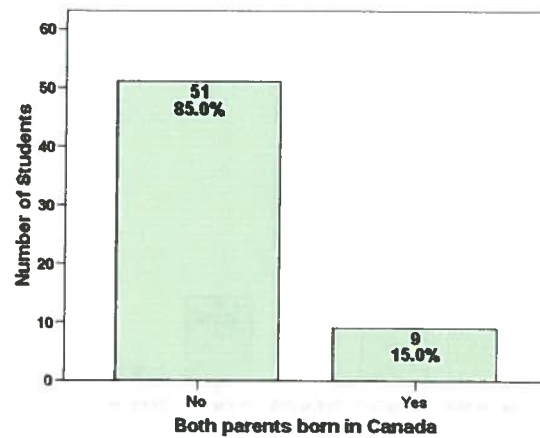


Figure 11: Distribution of Students by Parents' Place of Birth

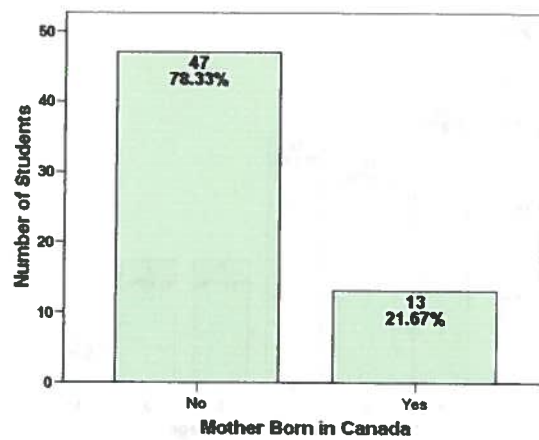


Figure 12: Distribution of Students by Mother's Place of Birth

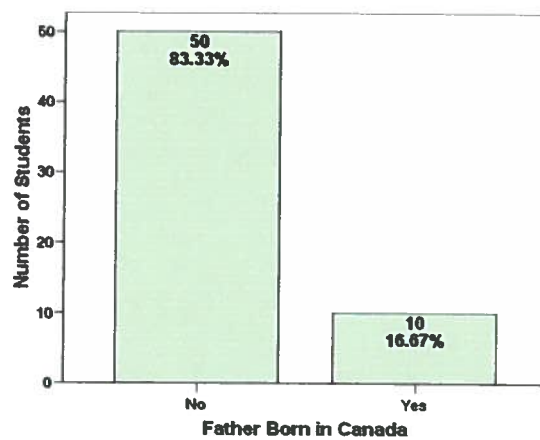


Figure 13: Distribution of Students by Father's Place of Birth

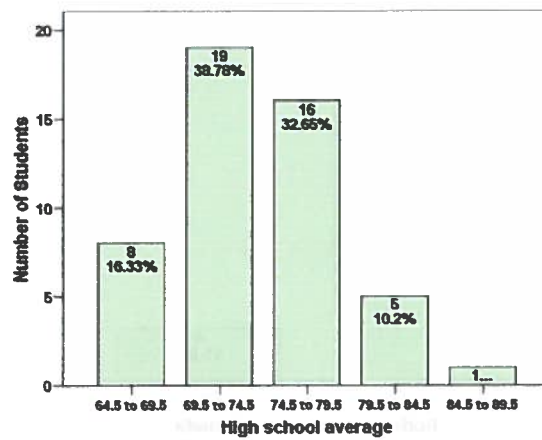


Figure 14: Distribution of Students by High School Average Bracket

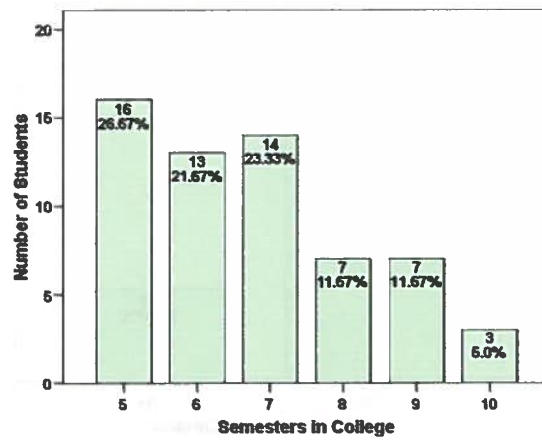



Figure 15: Distribution of Students by Actual Number of Semesters in Collage

Table 6
Languages Spoken by Each Student –
Superscripts after Student Code Indicate Country of Birth

Student Code	Language(s)					
001 ¹	English	French	Spanish	Chwi		
002 ²	Dari	English	French			
003 ³	English	Armenian	French			
004 ⁴	English	French	Tagalog	Pangasinan		
005 ^{5,6}	English	French	German			
006 ³¹	English	French				
007 ⁷	Chinese	English				
008 ⁸	French	Creole	English			
009 ⁴	Tagalog	English	French			
010 ⁹	English	Italian	French	Spanish		
011 ¹⁰	French	English	Hungarian	Romanian	Tagonese	Russian
012 ⁷	English	French	Cantonese	Mandarin		
013 ¹⁰	French	English	Romanian			
014 ¹¹	Russian	English	French	Lithuanian		
015 ¹²	Lao	French	English	Spanish	Japanese	
016 ¹³	English	French	Vietnamese	Russian		
017 ¹⁴	French	English	Khmer			
018 ³¹	French	English	Spanish			
019 ³¹	English	French				
020 ¹⁵	French	Arabic	English			
021 ³¹	English	French	German	Japanese		
022 ³¹	English	French				
023 ⁹	English	French	Italian			
024 ⁹	English	Italian	French			
025 ^{9, 16}	English	French	Italian			
026 ¹⁷	Bengali	French	English	Spanish	Hindi	
027 ¹⁸	Persian	English	French			
028 ¹⁹	English	French				
029 ⁷	Chinese	English	French			
030 ⁹	English	French	Italian			
031 ²⁰	Korean	English	French			
032 ³¹	English	French	Italian			
033 ⁹	English	Italian	French			
034 ³¹	English	French				
035 ¹⁸	Persian	English	French			
036 ¹⁹	English	French	Portuguese	Spanish		
037 ²²	English	French	Gujarati			
038 ²³	English					
039 ⁴	Tagalog	English	French			
040 ²²	Cantonese	Mandarin	English	French		
041 ⁴	Tagalog	English	French			
042 ¹⁴	French	English	Cambodian	Dutch		
043 ¹⁹	English	French	Tamil			
044 ⁴	Tagalog	English	French	Spanish		
045 ²⁵	English	French	Arabic			
046 ¹⁸	Persian	English	French			
047 ¹⁹	English	Tamil	Hindi	French	Arabic	
048 ³¹	English	French				
049 ²³	French	English	Spanish			

050 ²²	English	Gujarati	French			
051 ⁷	Chinese	English	French			
052 ^{26, 4}	English	French				
053 ³¹	English	French				
054 ²²	English	Punjabi	French	Hindi		
055 ⁸	French	English	Creole			
056 ^{27, 28}	English	French	Russian	Armenian		
057 ²⁹	Russian	Ukrainian	English	French		
058 ³⁰	English	Urdu				
059 ³¹	French	English	Spanish			
060 ¹⁶	English	French				

¹ Ghana² Afghanistan³ Egypt⁴ Philippines⁵ Germany⁶ United States⁷ China⁸ Haiti⁹ Italy¹⁰ Romania¹¹ Lithuania¹² Laos¹³ Vietnam¹⁴ Cambodia¹⁵ Lebanon¹⁶ Trinidad¹⁷ Bangladesh¹⁸ Iran¹⁹ Sri Lanka²⁰ Republic of Korea²¹ Portugal²² India²³ Barbados²⁴ Hong Kong²⁵ Syria²⁶ El Salvador²⁷ Armenia²⁸ Russia²⁹ Ukraine³⁰ Pakistan³¹ Canada



VANIER COL: E PROGRAM PLANNER

Program: 221-C0 BUILDING SYSTEMS ENGINEERING TECHNOLOGY Grid: 221COR95 S: 6 Session: H07

Tel. 2007/02/07

Student

14 General Education Courses

4 English		3 Humanities		3 Physical Education		2 Complementaries		2 French		
	cr.		cr.		cr.		cr.		cr.	
603-101	69 2.66	345-101	78 2.00	109-103	80 1.00	520-HTB	81 2.00	602-101	78 2.00	
603-102	69 2.33	345-102	77 2.53	109-104	84 1.00	607-HSA	63 2.00	602-HSK	68 2.00	
603-103	60 2.33	345-HSA	75 2.00	109-105	In progress					
603-HSE	In progress	Must pass 345-102 or 345-103 first								
Must pass 603-101 first										
Chosen from specified categories and lists										

English exit examination: RE Comprehensive program assessment:

Specialization Courses

The courses listed below are required.

201-291-VA	79 2.66	221-492-VA	73 2.33	221-694-VA	In progress
201-391-VA	71 2.66	221-493-VA	67 2.33	221-695-VA	In progress
203-391-VA	66 2.00	221-494-VA	82 2.33	221-696-VA	In progress
203-491-VA	60 1.66	221-495-VA	67 2.66	311-391-VA	75 1.00
221-194-VA	74 2.66	221-591-VA	78 3.00	350-591-VA	67 2.00
221-291-VA	84 2.33	221-592-VA	78 3.00	420-704-VA	71 1.66
221-292-VA	83 1.66	221-594-VA	66 3.00		
221-293-VA	75 3.00	221-595-VA	77 2.33		
221-391-VA	74 2.33	221-692-VA	In progress		
221-392-VA	63 3.00	221-693-VA	In progress		

Substituted courses(SU): 0

Out-of-program courses: 4

201-009-50	67 2.66	203-006-06	80 3.33	360-902-85	63 2.00	360-907-86	83 2.00
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ADV:

Figure 16: Sample Student Program Planner



VANIER COLLEGE
821, AVENUE STE-CROIX
SAINT-LAURENT (QUE)
H4L 3X9

COLLEGE STUDIES TRANSCRIPT

College Code:

Student Number: _____

Permanent Code:

Date of Birth:

Courses		Mark (%)	Class Average	Credits	Remark	Term	Other College Code
Course Code	Course title						
201-009-50	Mathematics 536 Upgrading	70	60	2.66		H-03	
202-006-06	Chemistry 534 Upgrading	37	59		EC	H-03	
203-006-06	Physics 534 Upgrading	68	69	3.33		H-03	
360-902-85	Study Skills	60	66	2.00		H-03	
360-907-86	Job Search Techniques	68	66	2.00		H-03	
603-101-04	Introduction to College English	49	55		EC	H-03	
109-104-02	Physical Activity	89	77	1.00		A-03	
201-171-95	Mathematical Models I	77	65	2.66		A-03	
243-123-95	Understanding the Occupation	60	65	1.33		A-03	
243-133-95	Electrical Technology	73	71	3.00		A-03	
243-143-92	The Computer As a Tool	75	60	1.66		A-03	
345-102-03	World Views	42	69		EC	A-03	
603-101-04	Introduction to College English	60	71	2.66		A-03	
109-103-02	Health and Physical Education	85	67	1.00		H-04	
201-271-92	Mathematical Models II	60	69	2.66		H-04	
243-153-92	Creating Control Systems	60	71	3.00		H-04	
243-163-92	Circuits	82	81	3.00		H-04	
401-HTD-03	Business Law	50	37		EC	H-04	
603-103-04	Literary Themes	46	67		EC	H-04	
109-105-02	Active Living	84	77	1.00		A-04	
242-171-95	Technical Drawing	89	91	2.00		A-04	
243-204-92	Process Control	73	70	3.00		A-04	
243-214-92	Drive Trains of Electrical Machines	73	71	3.00		A-04	
243-224-92	Controllers	76	72	2.66		A-04	
345-102-03	World Views	70	75	2.00		A-04	
602-100-03	Basic French	60	64	2.00		A-04	
243-234-92	Signal Processing	66	68	2.33		H-05	

CONTINUED NEXT PAGE

<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> Send </div> <p>Credit: equivalent to 45 hours of learning activities Term: A = Fall H = Winter E = Summer</p>	<p>Other college where student was enrolled <u>Code Name of college</u></p>
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> Remarks </div> <p> AB = Abandoned EC = Failure IT = Temporary Incomplete DI = Exemption EQ = Equivalence RE = Success EA = Failure due to dropping EX = Exemption SU = Substitution IN = Permanent Incomplete </p>	

None

Date of Issue: 2007-02-08

Figure 17: Sample Student College Transcript

Imprimé le : 2007-01-25

* Formation générale *

	CODE	TITRE	UN	RÉSULTAT	ANNÉE	SESSION	CEN	R/5
Unités accumulées	035534	Biologie générale opt.	4	82	2001	Juin	1	
4e secondaire formation générale : 34	044412	Éducation physique	2	83	2001	Juin	1	
	044512	Éducation physique	2	87	2002	Juin	1	
5e secondaire formation générale : 36	051570	Chimie 534-épreuve écrite		73	2002	Juin	3	
	051580	Chimie 534-épr.en laboratoire		74	2002	Juin	3	
Formation professionnelle :	051584	Chimie 534	4	74	2002	Juin		
Total : 70	054570	Physique 534-épreuve écrite		61	2002	Juin	5	
	054580	Physique 534-épr. laboratoire		78	2002	Juin	5	
	054584	Physique 534	4	66	2002	Juin		
	056430	Sciences physiques 436	0	80	2001	Juin	1	
	056470	Sciences physiques-épr. écrite		88	2001	Juin	79	
	056480	Sciences physiques-épr. labor.		90	2001	Juin	1	
	056486	Sciences physiques 416	6	89	2001	Juin	83	
	056532	Techn. & méth.-sciences nature	2	70	2002	Juin	5	
	068436	Mathématique 436	6	69	2001	Juin	54	
	068536	Mathématique 536		54	2002	Juin	5	
	076412	Enseignement moral	2	97	2001	Juin	1	
	076512	Enseignement moral	2	86	2002	Juin	2	
	085414	Histoire du Québec et Canada	4	85	2001	Juin	76	
	102514	Éducation économique	4	87	2002	Juin	1	
	106411	Éducation choix de carrière	1	90	2001	Juin	1	
	106511	Éducation choix de carrière	1	81	2002	Juin	1	
	115451	Form. personnelle & sociale	1	99	2001	Juin	1	
	115551	Form. personnelle & sociale	1	91	2002	Juin	1	
	128460	Français, écriture		84	2001	Juin	1	
	128470	Français, lecture		79	2001	Juin	1	
	128480	Français, communication orale		90	2001	Juin	1	
	128486	Français, langue mat.-4e sec.	6	83	2001	Juin		
	128510	Français, écriture		88	2002	Juin	88	
	128520	Français, lecture		74	2002	Juin	1	
	128530	Français, communication orale		81	2002	Juin	2	
* Diplôme d'études secondaires accordé	128536	Français, langue mat.-5e sec.	6	82	2002	Juin	81	
* 2002 Formation générale								
*****	134482	Anglais, l. sec.-progr. enrichi	2	82	2001	Juin	2	
	134592	Anglais, l. sec.-progr. enrichi	2	84	2002	Juin	2	
	136470	Production orale et écrite		79	2001	Juin	50	
	136480	Compréhension (oral et écrit)		85	2001	Juin	58	
	136484	Anglais, langue seconde-4e sec.	4	83	2001	Juin	56	
	136510	Production orale et écrite		86	2002	Juin	62	
	136520	Compréhension (oral et écrit)		91	2002	Juin	58	
	136524	Anglais, langue seconde-5e sec.	4	89	2002	Juin	61	

Normes du régime 3 (J3)



Figure 18: Sample Student High School Transcript

2000
2000

2000
2000

2000
2000

2000
2000

APPENDIX E

DESTRUCTIVE STATISTICS OF VARIABLES



INDEPENDENT VARIABLES

Table 7

Independent Variable – Students' Primary Home Languages by Category

Primary home language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	English	24	40.0	40.0	40.0
	French	7	11.7	11.7	51.7
	Other	29	48.3	48.3	100.0
	Total	60	100.0	100.0	

Table 8

Independent Variable – Students' Place of Birth – Canada (Yes or No)

Born in Canada

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	51.7	51.7	51.7
	Yes	29	48.3	48.3	100.0
	Total	60	100.0	100.0	

Table 9

Independent Variable – Parents' Place of Birth – Both Born in Canada (Yes or No)

Both parents born in Canada

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	51	85.0	85.0	85.0
	Yes	9	15.0	15.0	100.0
	Total	60	100.0	100.0	

Table 10

Independent Variable – High School Language of Instruction by Category

H.S. Language of Instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	English	27	45.0	45.0	45.0
	French	26	43.3	43.3	88.3
	Other	7	11.7	11.7	100.0
	Total	60	100.0	100.0	

Table 11
Independent Variable – High School Averages by Category
High school average

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	64.5 < hsavg < 69.5	8	13.3	16.3	16.3
	69.5 < hsavg < 74.5	19	31.7	38.8	55.1
	74.5 < hsavg < 79.5	16	26.7	32.7	87.8
	79.5 < hsavg < 84.5	5	8.3	10.2	98.0
	84.5 < hstavg < 89.5	1	1.7	2.0	100.0
	Total	49	81.7	100.0	
Missing	System	11	18.3		
Total		60	100.0		

Table 12
Independent Variable – English Entry Level Course According to Placement Tests

English Entry Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	603-001-06 Preparation for College English	6	10.0	11.5	11.5
	603-101-33 Effective Reading and Writing	10	16.7	19.2	30.8
	603-101-31 Literature and Composition	31	51.7	59.6	90.4
	603-101-30 Introduction to College English	5	8.3	9.6	100.0
	Total	52	86.7	100.0	
Missing	System	8	13.3		
Total		60	100.0		

DEPENDENT VARIABLES

Table 13
Dependent Variable – English Entry Level Course According to Placement Tests

English Entry Level		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	603-001-06 Preparation for College English	6	10.0	11.5	11.5
	603-101-33 Effective Reading and Writing	10	16.7	19.2	30.8
	603-101-31 Literature and Composition	31	51.7	59.6	90.4
	603-101-30 Introduction to College English	5	8.3	9.6	100.0
	Total	52	86.7	100.0	
Missing	System	8	13.3		
Total		60	100.0		

Table 14
Dependent Variable – Number of English Courses Completed

Number of English completed		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	18.3	18.3	18.3
	2	10	16.7	16.7	35.0
	3	20	33.3	33.3	68.3
	4	19	31.7	31.7	100.0
	Total	60	100.0	100.0	

Table 15
Dependent Variable – Number of English Courses Failed

Number of English failed		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	35	58.3	58.3	58.3
	1	11	18.3	18.3	76.7
	2	5	8.3	8.3	85.0
	3	8	13.3	13.3	98.3
	4	1	1.7	1.7	100.0
	Total	60	100.0	100.0	

Table 16
Dependent Variable – Expect Any English Courses Left after the 6th Semester

Expected English Left after 6th Semester

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	21	35.0	35.0	35.0
	Yes	39	65.0	65.0	100.0
	Total	60	100.0	100.0	

Table 17
Dependent Variable – Number of Humanities Courses Completed
Number of Humanities completed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	10.0	10.0	10.0
	1	9	15.0	15.0	25.0
	2	19	31.7	31.7	56.7
	3	26	43.3	43.3	100.0
	Total	60	100.0	100.0	

Table 18
Dependent Variable – Number of Humanities Courses Failed
Number of Humanites failed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	43	71.7	71.7	71.7
	1	13	21.7	21.7	93.3
	2	2	3.3	3.3	96.7
	3	2	3.3	3.3	100.0
	Total	60	100.0	100.0	

Table 19
Dependent Variable – Expect Any Humanities Courses Left after the 6th Semester

Expected Humanities Left afer 6th semester

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	28	46.7	46.7	46.7
	Yes	32	53.3	53.3	100.0
	Total	60	100.0	100.0	

Table 20
Dependent Variable – Combined Total Number of English and Humanities Courses
Left after the End of the Sixth Semester

Combined English and Humanites left after 6th semester				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	18	30.0	30.0	30.0
1	9	15.0	15.0	45.0
2	9	15.0	15.0	60.0
3	13	21.7	21.7	81.7
4	3	5.0	5.0	86.7
5	3	5.0	5.0	91.7
6	5	8.3	8.3	100.0
Total	60	100.0	100.0	

Table 21
Dependent Variable – Level of English Spoken
Level of English spoken

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid can make themselves understood	8	13.3	13.3	13.3
comfortable	13	21.7	21.7	35.0
fluent	39	65.0	65.0	100.0
Total	60	100.0	100.0	

Table 22
Dependent Variable – Level of English Read

Level of English read				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid can make themselves understood	3	5.0	5.0	5.0
comfortable	20	33.3	33.3	38.3
fluent	37	61.7	61.7	100.0
Total	60	100.0	100.0	

Table 23
Dependent Variable – Level of English Written

Level of English written

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid can make themselves understood	8	13.3	13.3	13.3
comfortable	22	36.7	36.7	50.0
fluent	30	50.0	50.0	100.0
Total	60	100.0	100.0	

At the 1995 World Bank Conference on the Environment and Development, the World Bank President, James D. Wolfensohn, stated that the environment is not just a luxury, but a necessity for sustainable development. He emphasized that the environment is a natural resource that must be managed wisely to ensure the well-being of future generations.



APPENDIX F

RESEARCH QUESTION 1 RESULTS

Variable	Mean	Standard Deviation	Minimum	Maximum
Environment	4.50	1.50	1.00	6.00
Development	3.50	1.50	1.00	6.00
Sustainable Development	4.00	1.50	1.00	6.00



Hypothesis H1a

Vanier College L1-English hard technology students will, on average, have completed more of the required four English courses than L1-Not-English students by the end of their fifth semester.

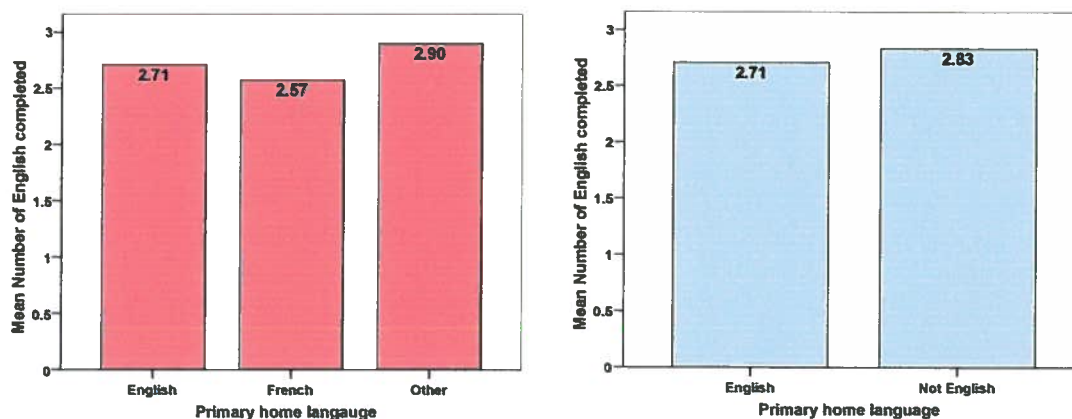


Figure 19: English Courses Completed vs. Primary Home Language

Table 24
English Courses Completed by Primary Home Language

Group Statistics

Primary home language		N	Mean	Std. Deviation	Std. Error Mean
Number of English completed	English	24	2.71	1.160	.237
	Not English	36	2.83	1.056	.176

Table 25
Independent Sample t-Tests for Hypothesis H1a

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English completed	Equal variances assumed	.369	.546	-.432	58	.667	-.125	.289	-.704	.454
	Equal variances not assumed			-.424	46.154	.674	-.125	.295	-.719	.469

Hypothesis H1b:

Vanier College L1-English hard technology students will, on average, have failed fewer English courses than L1-Not-English students by the end of their fifth semester.

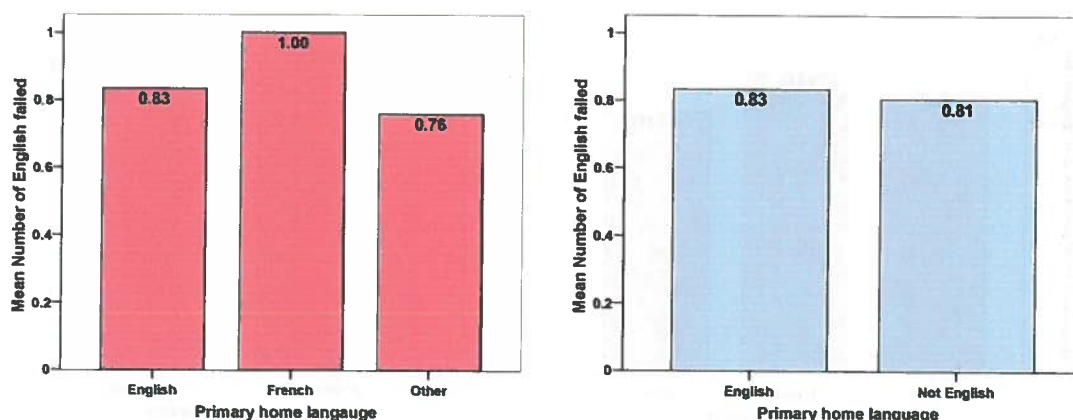


Figure 20: English Courses Failed vs. Primary Home Language

Table 26
English Courses Failed by Primary Home Language

Group Statistics

Primary home language		N	Mean	Std. Deviation	Std. Error Mean
Number of English failed	English	24	.83	1.167	.238
	Not English	36	.81	1.167	.194

Table 27
Independent Sample t-Tests for Hypothesis H1b

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English failed	Equal variances assumed	.228	.635	.090	58	.928	.028	.307	-.588	.643
	Equal variances not assumed			.090	49.432	.928	.028	.308	-.590	.646

Hypothesis H1c:

A higher percentage of Vanier College L1-English hard technology students will have completed all of their required English courses by the end of the fifth semester than L1-Not-English students.

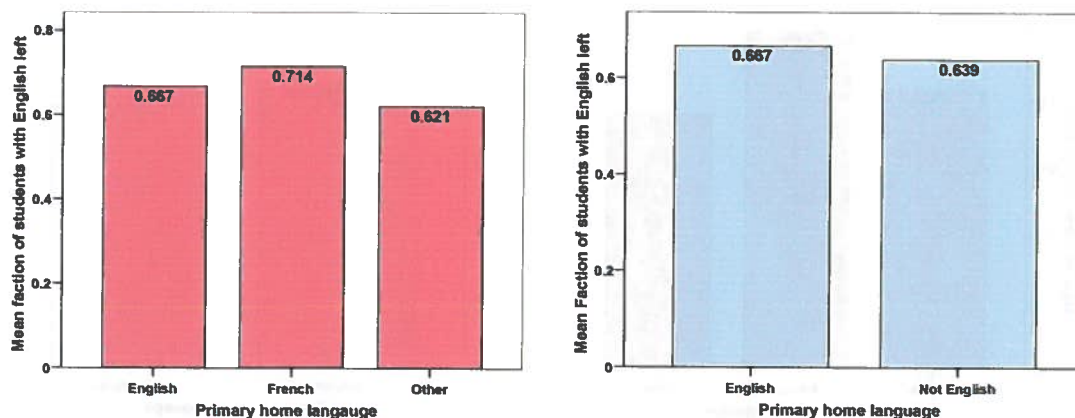


Figure 21: Students with English Courses Left after 6th Semester

Table 28
English Courses Left after 6th Semester by Primary Home Language

Group Statistics

Primary home language		N	Mean	Std. Deviation	Std. Error Mean
English - not English					
Expected English Left after 5th Semester	English	24	.67	.482	.098
	Not English	36	.64	.487	.081

Table 29
Independent Sample t-Tests for Hypothesis H1c

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected English Left after 5th Semester	Equal variances assumed	.195	.660	.217	58	.829	.028	.128	-.228	.284
	Equal variances not assumed			.218	49.843	.828	.028	.127	-.228	.284

Hypothesis H1d

Vanier College L1-English hard technology students will, on average, have completed more of the required three Humanities courses than L1-Not-English students by the end of their fifth semester.

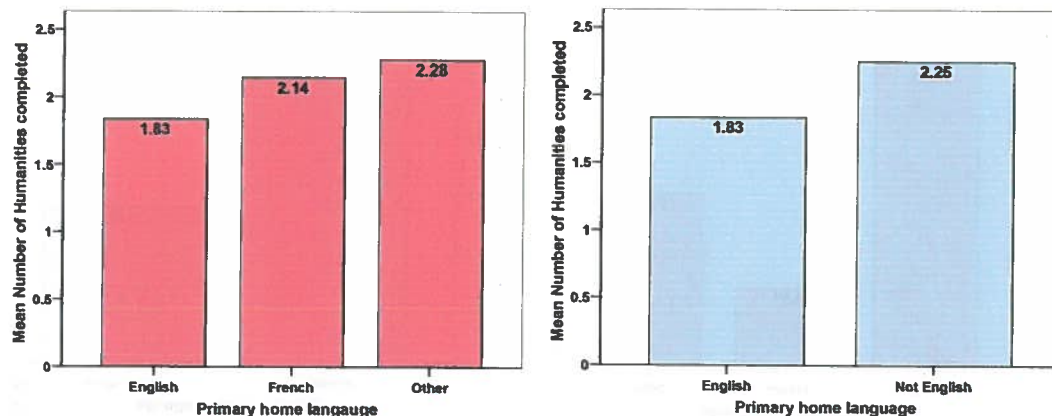


Figure 22: Humanities Completed vs. Primary Home Language

Table 30
Humanities Courses Completed by Primary Home Language
Group Statistics

	Primary home language English - not English	N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities completed	English	24	1.83	1.167	.238
	Not English	36	2.25	.841	.140

Table 31
Independent Sample t-Tests for Hypothesis H1d

		Independent Samples Test							
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Number of Humanities completed	Equal variances assumed	3.793	.056	-1.608	58	.113	-.417	.259	-.935 .102
	Equal variances not assumed			-1.507	38.632	.140	-.417	.276	-.976 .143

Hypothesis H1e

Vanier College L1-English hard technology students will, on average, have failed fewer Humanities courses than L1-Not-English students by the end of their fifth semester.

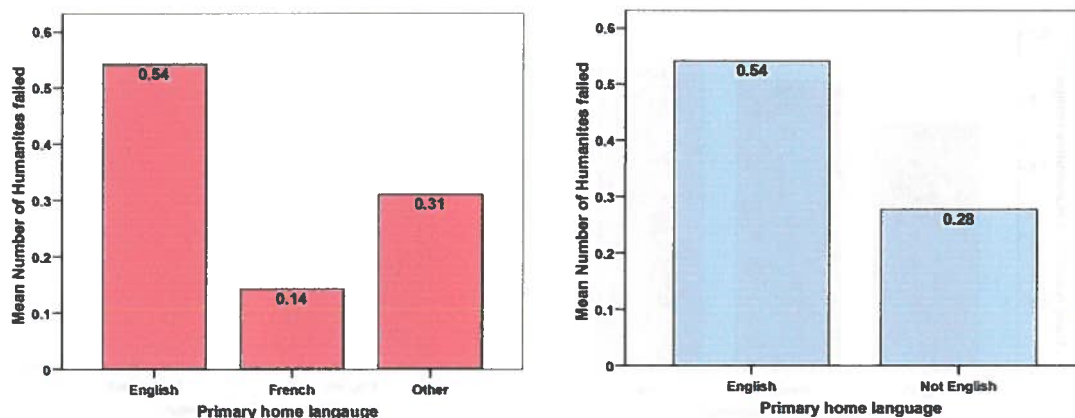


Figure 23: Humanities Courses Failed vs. Primary Home Language

Table 32
Humanities Courses Failed by Primary Home Language

Group Statistics

Primary home language		N	Mean	Std. Deviation	Std. Error Mean
English - not English					
Number of Humanites failed	English	24	.54	.932	.190
	Not English	36	.28	.513	.086

Table 33
Independent Sample t-Tests for Hypothesis H1e

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of Humanites failed	Equal variances assumed	7.489	.008	1.412	58	.163	.264	.187	-.110	.638
	Equal variances not assumed			1.266	32.382	.215	.264	.209	-.161	.688

Hypothesis H1f:

A higher percentage of Vanier College L1-English hard technology students will have completed all of their required Humanities courses by the end of the fifth semester than L1-Not-English students.

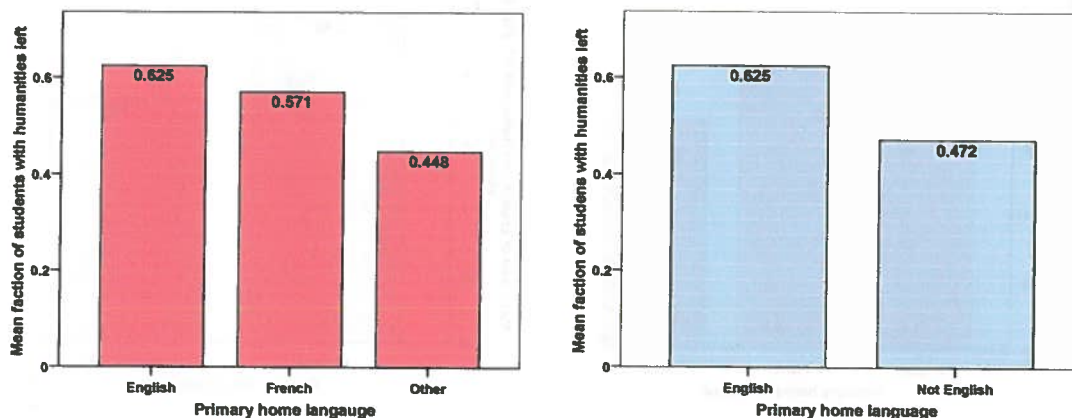


Figure 24: Students with Humanities Courses Left after 6th Semester

Table 34
Humanities Left after 6th Semester by Primary Home Language

Group Statistics

Primary home language		N	Mean	Std. Deviation	Std. Error Mean
English - not English					
Expected Humanities	English	24	.63	.495	.101
Left after 5th semester	Not English	36	.47	.506	.084

Table 35
Independent Sample t-Tests for Hypothesis H1f

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected Humanities Left after 5th semester	Equal variances assumed	1.943	.169	1.156	58	.253	.153	.132	-.112	.417
	Equal variances not assumed			1.161	50.251	.251	.153	.132	-.111	.417

Hypothesis H1g:

Vanier College L1-English hard technology students will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than L1-Not-English students.

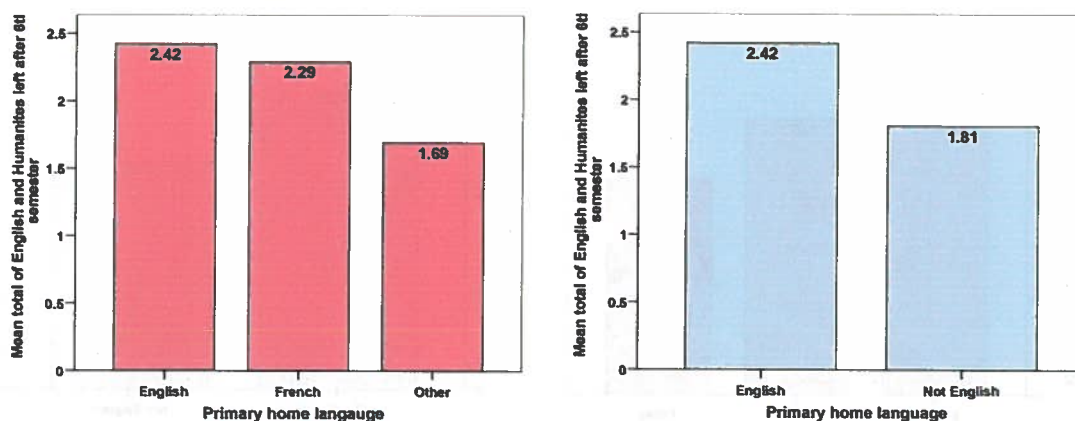


Figure 25: English and Humanities Courses Left after 6th Semester

Table 36
English and Humanities Left after 6th Semester
by Primary Home Language

Group Statistics					
	Primary home language English - not English	N	Mean	Std. Deviation	Std. Error Mean
Combined English and Humanities left after 6th semester	English	24	2.42	2.165	.442
	Not English	36	1.81	1.687	.281

Table 37
Independent Sample t-Tests for Hypothesis H1g

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Combined English and Humanities left after 5th semester	Equal variances assumed	1.925	.171	1.226	58	.225	.611	.498	-.387	1.609
	Equal variances not assumed			1.167	40.977	.250	.611	.524	-.447	1.669

Summary Independent Samples T-Test Table for Research Question 1

Does a Vanier College hard technology student's primary home language have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Table 38:

Summary Table of Independent Samples t-test Results for Research Question 1.
No Significant Difference Between Groups was Found for any of the Hypotheses.

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of English completed	Equal variances assumed	.369	.546	-.432	58	.667	-.125	.289	-.704	.454
	Equal variances not assumed			-.424	46.154	.674	-.125	.295	-.719	.469
Number of English failed	Equal variances assumed	.228	.635	.090	58	.928	.028	.307	-.588	.643
	Equal variances not assumed			.090	49.432	.928	.028	.308	-.590	.646
Expected English Left after 5th Semester	Equal variances assumed	.195	.660	.217	58	.829	.028	.128	-.228	.284
	Equal variances not assumed			.218	49.843	.828	.028	.127	-.228	.284
Number of Humanities completed	Equal variances assumed	3.793	.056	-1.608	58	.113	-.417	.259	-.935	.102
	Equal variances not assumed			-1.507	38.632	.140	-.417	.276	-.976	.143
Number of Humanities failed	Equal variances assumed	7.489	.008	1.412	58	.163	.264	.187	-.110	.638
	Equal variances not assumed			1.266	32.382	.215	.264	.209	-.161	.688
Expected Humanities Left after 5th semester	Equal variances assumed	1.943	.169	1.156	58	.253	.153	.132	-.112	.417
	Equal variances not assumed			1.161	50.251	.251	.153	.132	-.111	.417
Combined English and Humanities left after 5th semester	Equal variances assumed	1.925	.171	1.226	58	.225	.611	.498	-.387	1.609
	Equal variances not assumed			1.167	40.977	.250	.611	.524	-.447	1.669

Hypothesis H2a

Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to speak English than will L1-English students.

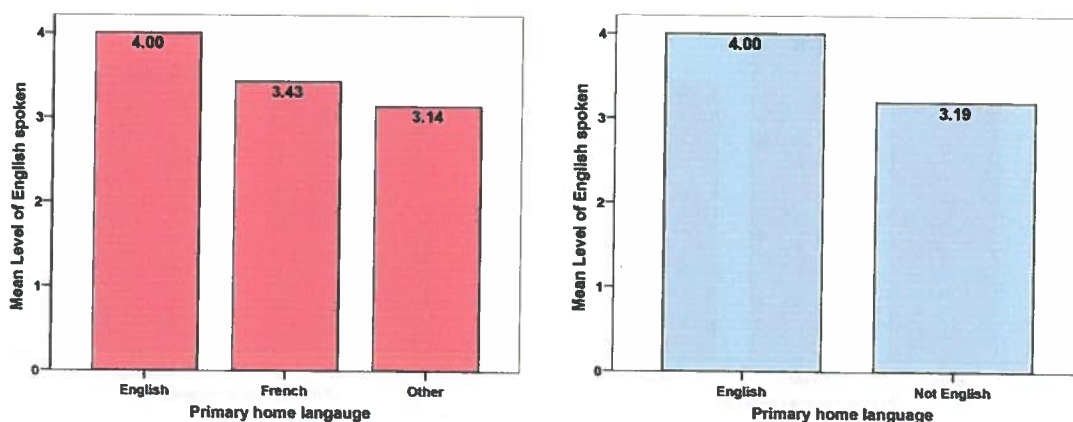


Figure 26: Mean Level English Spoken vs. Primary Home Language

Table 39
Level of English Spoken by Primary Home Language

Ranks			
Primary home language		N	Mean Rank
Level of English spoken	English	24	41.00
	Not English	36	23.50
	Total	60	

Table 40
Hypothesis H2a – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics ^{a,b}	
	Level of English spoken
Chi-Square	20.278
df	1
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Primary home language English - not English

Hypothesis H2b

Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to read English than will L1-English students.

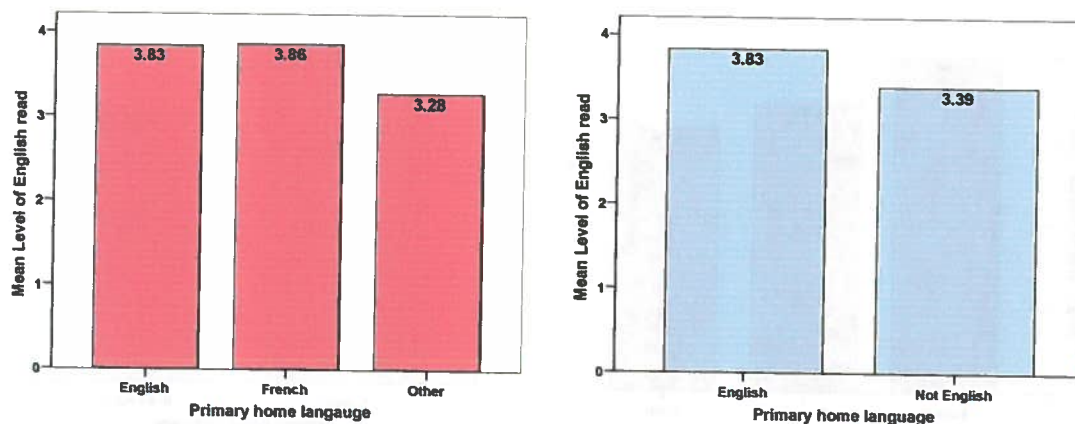


Figure 27: Mean Level English Read vs. Primary Home Language

Table 41
Level of English Read by Primary Home Language

Ranks			
Primary home language		N	Mean Rank
Level of English read	English	24	37.25
	Not English	36	26.00
	Total	60	

Table 42
Hypothesis H2b – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics ^{a,b}	
	Level of English read
Chi-Square	8.202
df	1
Asymp. Sig.	.004

a. Kruskal Wallis Test

b. Grouping Variable: Primary home language English - not English

Hypothesis H2c

Vanier College L1-Not-English hard technology students will, on average, rank themselves as lower in their ability to write English than will L1-English students.

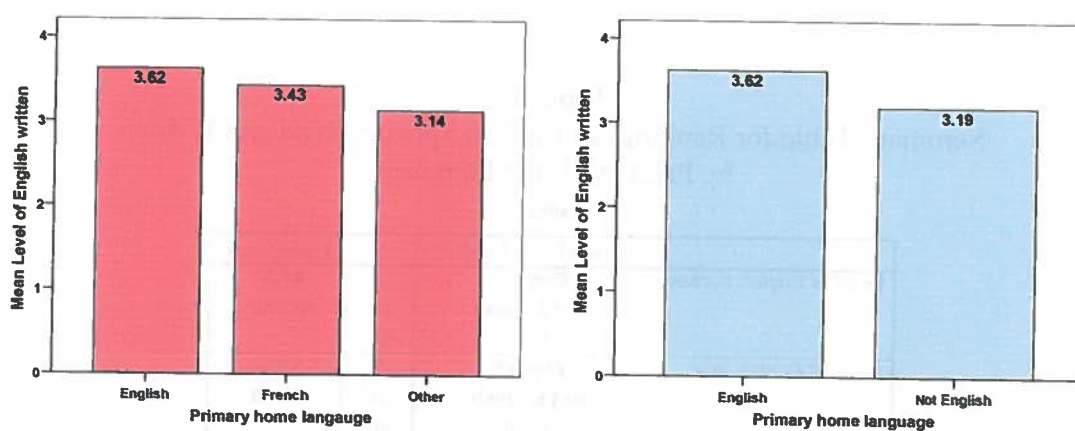


Figure 28: Mean Level English Written vs. Primary Home Language

Table 43
Level of English Written by Primary Home Language

Ranks			
Primary home language		N	Mean Rank
Level of English written	English	24	36.21
	Not English	36	26.69
	Total	60	

Table 44
Hypothesis H2c – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics ^{a,b}	
	Level of English written
Chi-Square	5.189
df	1
Asymp. Sig.	.023

a. Kruskal Wallis Test

b. Grouping Variable: Primary home language English - not English

Summary Kruskal-Wallis Test Table for Research Question 2

Does a Vanier College hard technology L1-Not-English student perceive him- or herself to be less fluent in speaking, reading and writing in English than a L1-English student?

Table 45
Summary Table for Rankings of English Spoken, Read and Written
by Primary Home Language

Ranks			
	Primary home language	N	Mean Rank
Level of English spoken	English	24	41.00
	Not English	36	23.50
	Total	60	
Level of English read	English	24	37.25
	Not English	36	26.00
	Total	60	
Level of English written	English	24	36.21
	Not English	36	26.69
	Total	60	

Table 46
Summary table of Kruskal-Wallis Test for Research Question 2 – Note that
significant difference between groups was found for all hypotheses.

Test Statistics^{a, b}

	Level of English spoken	Level of English read	Level of English written
Chi-Square	20.278	8.202	5.189
df	1	1	1
Asymp. Sig.	.023	.004	.023

a. Kruskal Wallis Test

b. Grouping Variable: Primary home language English - not English

Hypothesis H3a

It is expected that the effect of the independent variable on the dependent variable will be positive and significant. This is because the independent variable is expected to have a positive effect on the dependent variable. The expected effect is based on the theoretical framework and the previous research findings.

APPENDIX H

RESEARCH QUESTION 3

Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	4.50	1.20	1.00	6.00
Independent Variable	3.50	1.00	1.00	5.00

Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	4.50	1.20	1.00	6.00
Independent Variable	3.50	1.00	1.00	5.00

Hypothesis H3a

Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required four English courses by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English.

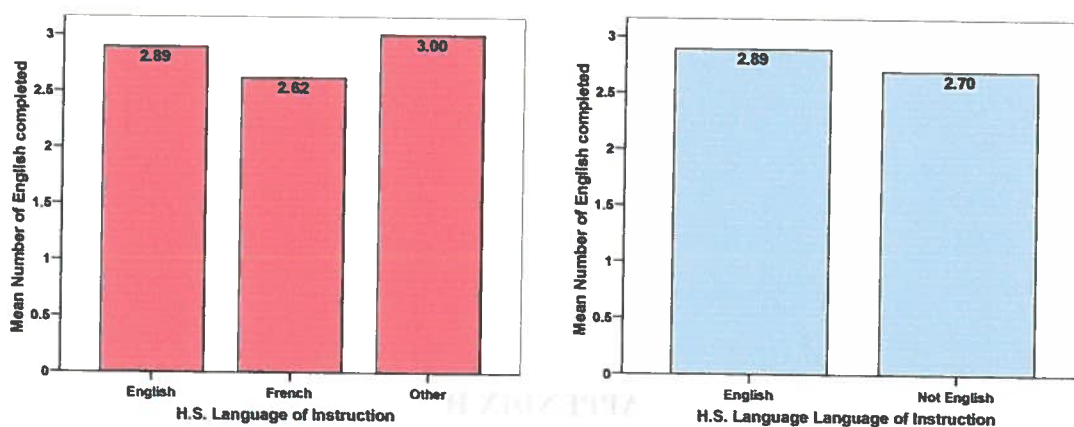


Figure 29: English Courses Completed vs. High School Language of Instruction

Table 47
English Courses Completed by H.S. Language of Instruction

Group Statistics					
H.S. Language - English - not English		N	Mean	Std. Deviation	Std. Error Mean
Number of English completed	English	27	2.89	1.121	.216
	Not English	33	2.70	1.075	.187

Table 48
Independent Sample t-Tests for Hypothesis H3a

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English completed	Equal variances assumed	.010	.919	.675	58	.502	.192	.284	-.377	.761
	Equal variances not assumed			.672	54.688	.504	.192	.286	-.380	.764

Hypothesis H3b

Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer English courses by the end of their fifth semester than those students who attended a high school where the language of instruction was Not-English.

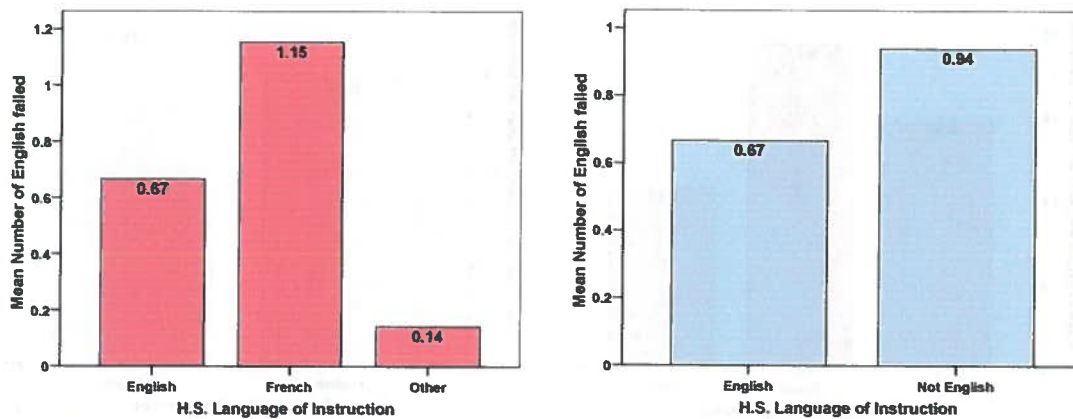


Figure 30: English Courses Failed vs. High School Language of Instruction

Table 49
English Courses Failed by H.S. Language of Instruction

Group Statistics

H.S. Language - English - not English		N	Mean	Std. Deviation	Std. Error Mean
Number of English failed	English	27	.67	1.074	.207
	Not English	33	.94	1.223	.213

Table 50
Independent Sample t-Tests for Hypothesis H3b

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English failed	Equal variances assumed	1.222	.273	-.907	58	.368	-.273	.301	-.875	.329
	Equal variances not assumed			-.919	57.682	.362	-.273	.297	-.867	.321

Hypothesis H3c

A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required English courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.

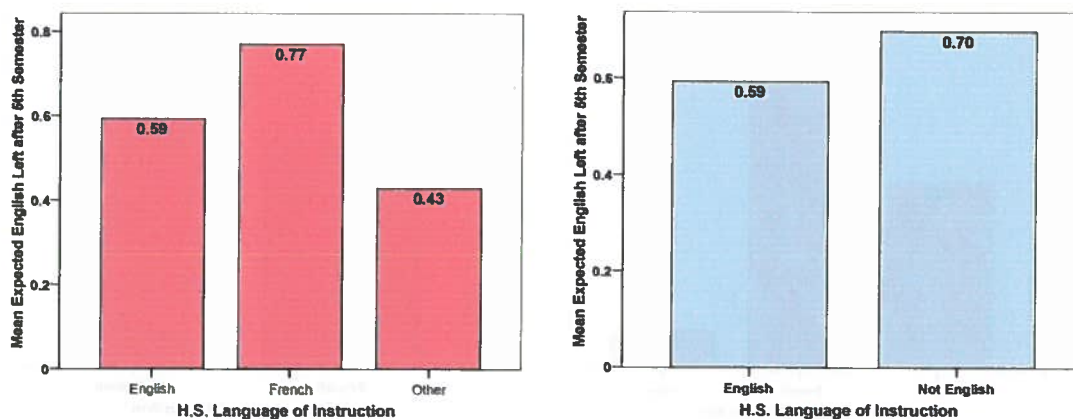


Figure 31: English Courses Left After 5th Semester vs. High School Language of Instruction

Table 51
English Left After 5th Semester by H.S. Language of Instruction

Group Statistics					
	H.S. Language - English - not English	N	Mean	Std. Deviation	Std. Error Mean
Expected English Left after 5th Semester	English	27	.59	.501	.096
	Not English	33	.70	.467	.081

Table 52
Independent Sample t-Tests for Hypothesis H3c

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected English Left after 5th Semester	Equal variances assumed	2.411	.126	-.834	58	.408	-.104	.125	-.355	.146
	Equal variances not assumed			-.828	53.950	.411	-.104	.126	-.357	.148

Hypothesis H3d

Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have completed more of the required three Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.

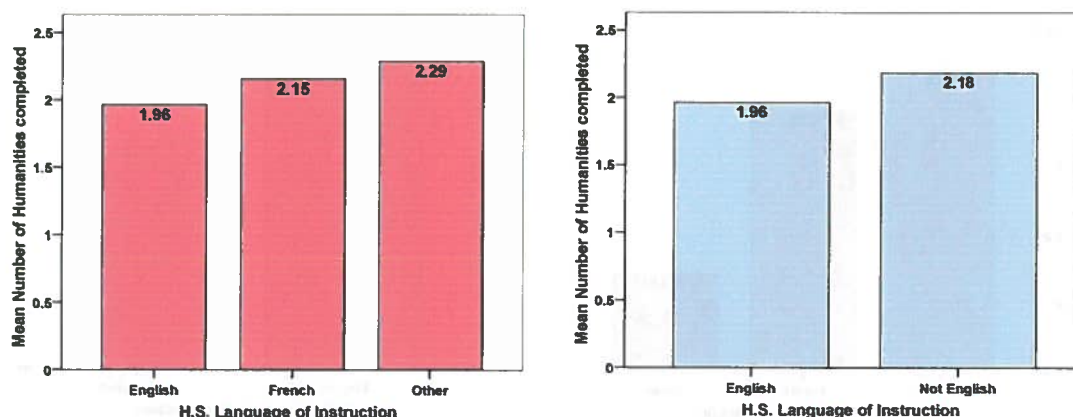


Figure 32: Humanities Courses Completed vs. High School Language of Instruction

Table 53
Humanities Courses Completed by H.S. Language of Instruction
Group Statistics

	H.S. Language - English - not English	N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities completed	English	27	1.96	1.126	.217
	Not English	33	2.18	.882	.154

Table 54
Independent Sample t-Tests for Hypothesis H3d

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of Humanities completed	Equal variances assumed	2.819	.099	-.844	58	.402	-.219	.259	-.738	.300
	Equal variances not assumed			-.824	48.698	.414	-.219	.266	-.753	.315

Hypothesis H3e

Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have failed fewer Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.

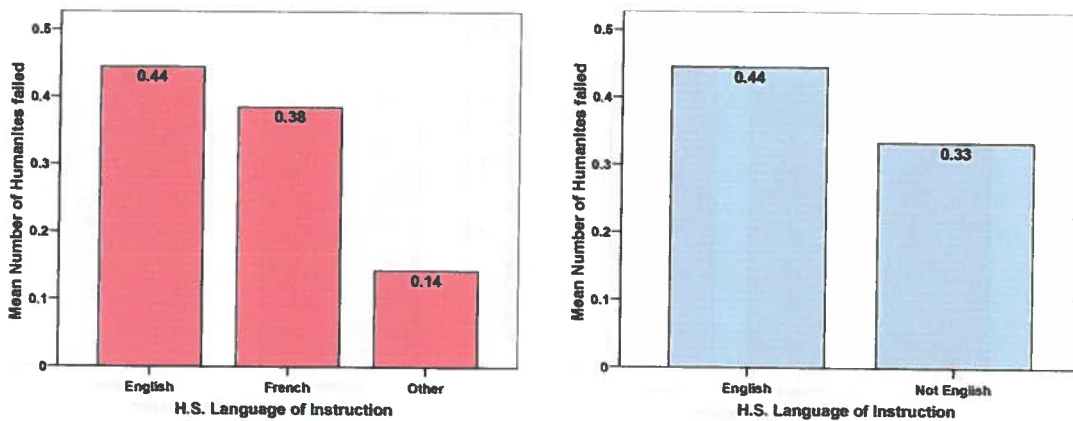


Figure 33: Humanities Courses Failed vs. High School Language of Instruction

Table 55
Humanities Courses Failed by H.S. Language of Instruction

Group Statistics

H.S. Language - English - not English		N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities failed	English	27	.44	.751	.145
	Not English	33	.33	.692	.120

Table 56
Independent Sample t-Tests for Hypothesis H3e

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
Number of Humanities failed	Equal variances assumed	.545	.463	.595	58	.554	.111	.187		-.262	.485
	Equal variances not assumed			.590	53.645	.557	.111	.188		-.266	.488

Hypothesis H3f

A higher percentage of Vanier College hard technology students who attended a high school where the language of instruction was English will have completed all of their required Humanities courses by the end of the fifth semester than those students who attended a high school where the language of instruction was Not-English.

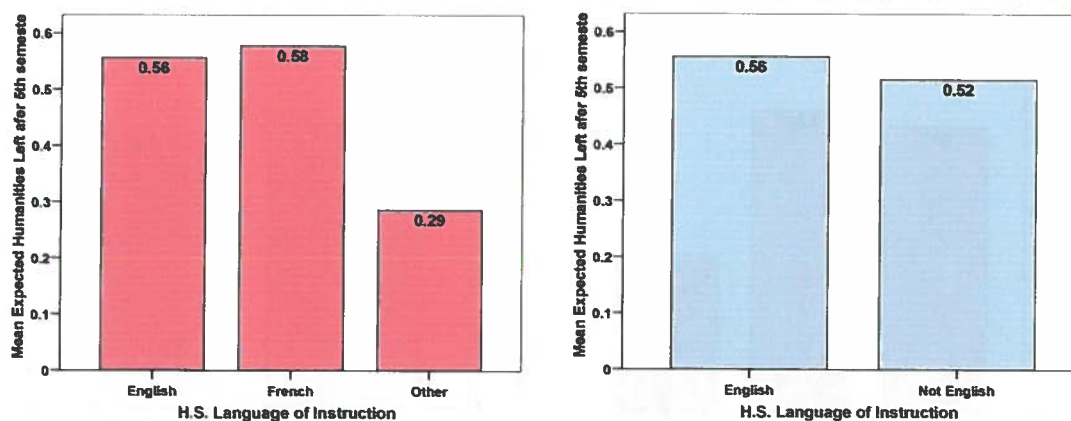


Figure 34: Humanities Courses Left After 5th Semester vs. High School Language of Instruction

Table 57
Humanities Left After 5th Semester by H.S. Language of Instruction

Group Statistics

	H.S. Language - English - not English	N	Mean	Std. Deviation	Std. Error Mean
Expected Humanities Left after 5th semester	English	27	.56	.506	.097
	Not English	33	.52	.508	.088

Table 58
Independent Sample t-Tests for Hypothesis H3f

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected Humanities Left after 5th semester	Equal variances assumed	.313	.578	.307	58	.760	.040	.132	Lower	Upper
	Equal variances not assumed			.307	55.720	.760	.040	.132	Lower	Upper

Hypothesis H3g

Vanier College hard technology students who attended a high school where the language of instruction was English will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than those students who attended a high school where the language of instruction was Not-English.

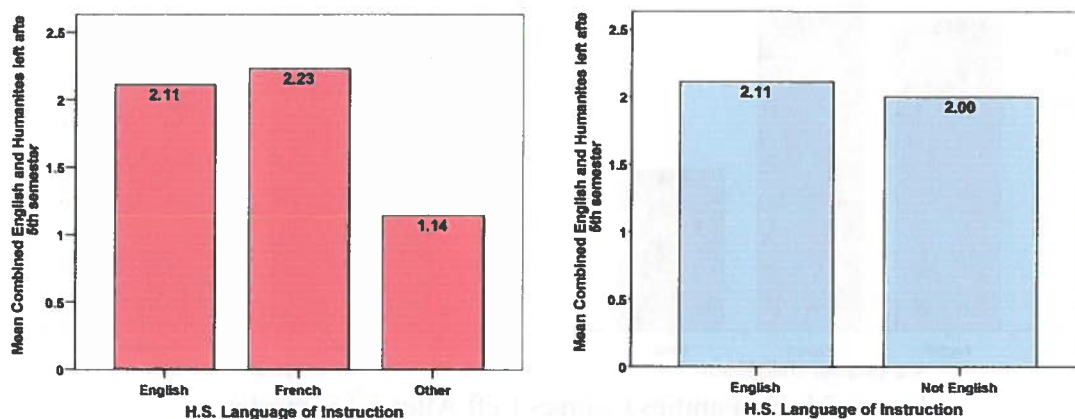


Figure 35: English & Humanities Courses Left After 5th Semester vs. High School Language of Instruction

Table 59
Total English & Humanities Left After 5th Semester
Group Statistics

	H.S. Language - English - not English	N	Mean	Std. Deviation	Std. Error Mean
Combined English and Humanites left after 5th semester	English	27	2.11	2.044	.393
	Not English	33	2.00	1.803	.314

Table 60
Independent Sample t-Tests for Hypothesis H3g

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Combined English and Humanites left after 5th semester	Equal variances assumed	.707	.404	.224	58	.824	.111	.497	-.884	1.106
	Equal variances not assumed			.221	52.381	.826	.111	.503	-.899	1.121

Summary Independent Samples T-Test Table for Research Question 3

Does a Vanier College hard technology student's high school language of instruction have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Table 61
Summary Table of Independent Samples T-Test Results for Research Question 3

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of English completed	Equal variances assumed	.010	.919	.675	58	.502	.192	.284	-.377	.761
	Equal variances not assumed			.672	54.688	.504	.192	.286	-.380	.764
Number of English failed	Equal variances assumed	1.222	.273	-.907	58	.368	-.273	.301	-.875	.329
	Equal variances not assumed			-.919	57.682	.362	-.273	.297	-.867	.321
Expected English Left after 5th Semester	Equal variances assumed	2.411	.126	-.834	58	.408	-.104	.125	-.355	.146
	Equal variances not assumed			-.828	53.950	.411	-.104	.126	-.357	.148
Number of Humanities completed	Equal variances assumed	2.819	.099	-.844	58	.402	-.219	.259	-.738	.300
	Equal variances not assumed			-.824	48.698	.414	-.219	.266	-.753	.315
Number of Humanites failed	Equal variances assumed	.545	.463	.595	58	.554	.111	.187	-.262	.485
	Equal variances not assumed			.590	53.645	.557	.111	.188	-.266	.488
Expected Humanities Left after 5th semester	Equal variances assumed	.313	.578	.307	58	.760	.040	.132	-.223	.304
	Equal variances not assumed			.307	55.720	.760	.040	.132	-.223	.304
Combined English and Humanites left after 5th semester	Equal variances assumed	.707	.404	.224	58	.824	.111	.497	-.884	1.106
	Equal variances not assumed			.221	52.381	.826	.111	.503	-.899	1.121

No significant difference between groups was found for any of Research Question 3 hypotheses.

Summary Independent 2-tailed t-Test Table for Research Question 4

There is a significant difference in the mean scores of the two groups on the research question 4. The mean score of the control group is significantly higher than the mean score of the experimental group. The mean score of the control group is 1.5 and the mean score of the experimental group is 1.0. The t-value is 2.5 and the p-value is 0.01.

Table 4.1: Summary Independent 2-tailed t-Test Table for Research Question 4

Group	Mean	Standard Deviation	t-value	p-value
Control	1.5	0.5	2.5	0.01
Experimental	1.0	0.5		

APPENDIX I

RESEARCH QUESTION 4 RESULTS

Hypothesis H4a

Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to speak English than those students who attended a high school where the language of instruction was English.

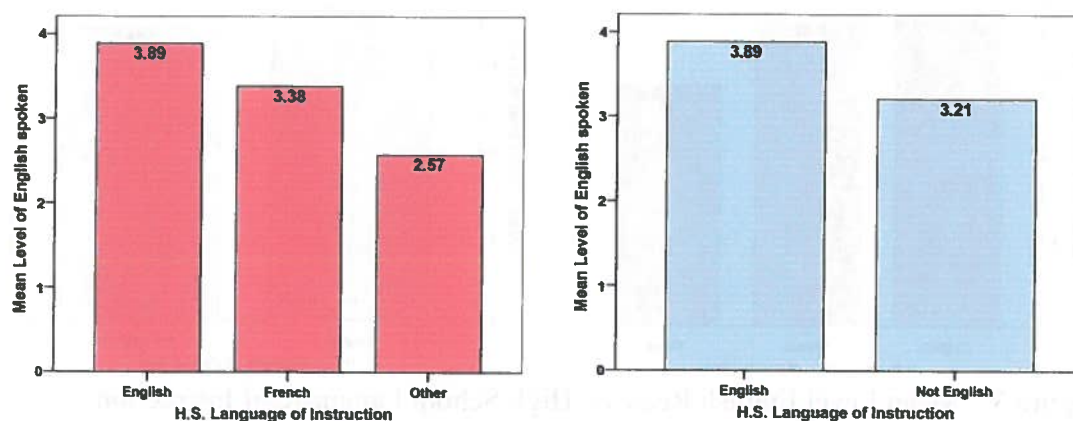


Figure 36: Mean Level English Spoken vs. High School Language of Instruction

Table 62
Level of English Spoken by High School Language of Instruction
Ranks

	H.S. Language	N	Mean Rank
Level of English spoken	English	27	38.11
	Not English	33	24.27
	Total	60	

Table 63
Hypothesis H4a – Note a Significant Difference Was Found Between How the L1-
Not-English and L1-English Students Rank Themselves

Test Statistics ^{a, b}	
	Level of English spoken
Chi-Square	13.076
df	1
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: H.S.
Language - English - not English

Hypothesis H4b

Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to read English than those students who attended a high school where the language of instruction was English.

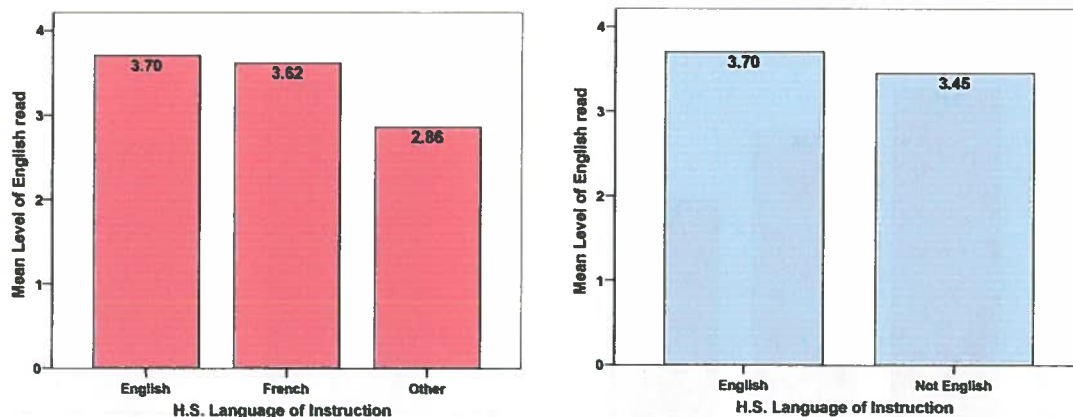


Figure 37: Mean Level English Read vs. High School Language of Instruction

Table 64
Level of English Read by High School Language of Instruction

Ranks			
Level of English read	H.S. Language - English	N	Mean Rank
	Not English	33	27.48
	Total	60	

Table 65
Hypothesis H4b – Note No Significant Difference Was Found Between How the L1-Not-English and L1-English Students Rank Themselves

Test Statistics ^{a,b}	
	Level of English read
Chi-Square	3.000
df	1
Asymp. Sig.	.083

a. Kruskal Wallis Test

b. Grouping Variable: H.S.
Language - English - not English

Hypothesis H4c

Vanier College hard technology students who attended a high school where the language of instruction was Not-English will, on average, rank themselves as lower in their ability to write English than those students who attended a high school where the language of instruction was English.

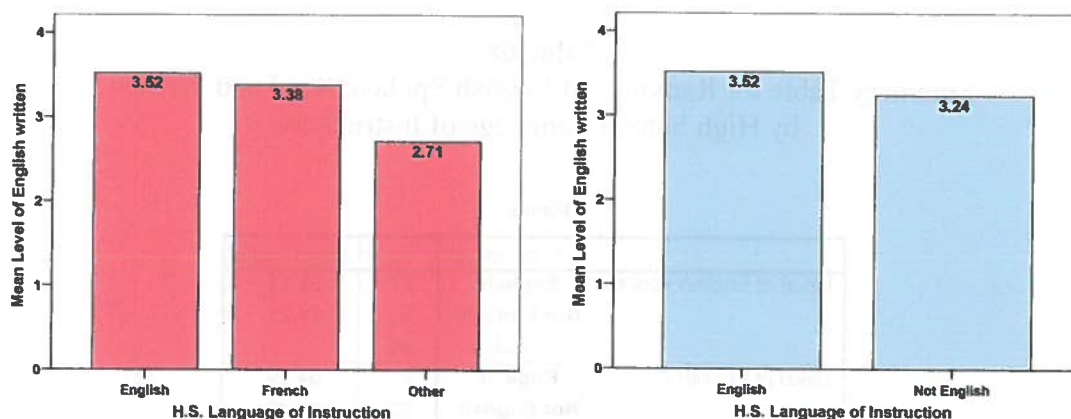


Figure 38: Mean Level English Written vs. High School Language of Instruction

Table 66
Level of English Written by High School Language of Instruction

Ranks			
Level of English written	H.S. Language -	N	Mean Rank
	English	27	33.80
	Not English	33	27.80
	Total	60	

Table 67
Hypothesis H4b – Note No Significant Difference Was Found Between How the L1-Not-English and L1-English Students Rank Themselves

Test Statistics ^{a,b}	
	Level of English written
Chi-Square	2.124
df	1
Asymp. Sig.	.145

a. Kruskal Wallis Test

b. Grouping Variable: H.S.
Language - English - not English

Summary Kruskal-Wallis Test Table for Research Question 4

Does a Vanier College hard technology student who attended a high school where the language of instruction was not English perceive him- or herself to be less fluent in speaking, reading and writing in English than does a student who attended a high school where the language of instruction was English?

Table 68
Summary Table for Rankings of English Spoken, Read and Written
by High School Language of Instruction

Ranks			
	H.S. Language	N	Mean Rank
Level of English spoken	English	27	38.11
	Not English	33	24.27
	Total	60	
Level of English read	English	27	34.19
	Not English	33	27.48
	Total	60	
Level of English written	English	27	33.80
	Not English	33	27.80
	Total	60	

Table 69
Summary table of Kruskal-Wallis Test for Research Question 4 – Note that
Significant Difference between groups was found for Level of English Spoken Only.

Test Statistics ^{a,b}			
	Level of English spoken	Level of English read	Level of English written
Chi-Square	13.076	3.000	2.124
df	1	1	1
Asymp. Sig.	.000	.083	.145

a. Kruskal Wallis Test

b. Grouping Variable: H.S. Language - English - not English

Hypothesis H5a

It was expected that the effect of the independent variable on the dependent variable would be significant and positive. The results of the regression analysis showed that the effect of the independent variable on the dependent variable was significant and positive, supporting the hypothesis.



APPENDIX J

RESEARCH QUESTION 5 RESULTS

Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	4.50	1.20	2.00	6.00
Independent Variable	3.50	1.00	2.00	5.00

Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	4.50	1.20	2.00	6.00
Independent Variable	3.50	1.00	2.00	5.00

Hypothesis H5a

Vanier College hard technology students who were born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students who were not born in Canada.

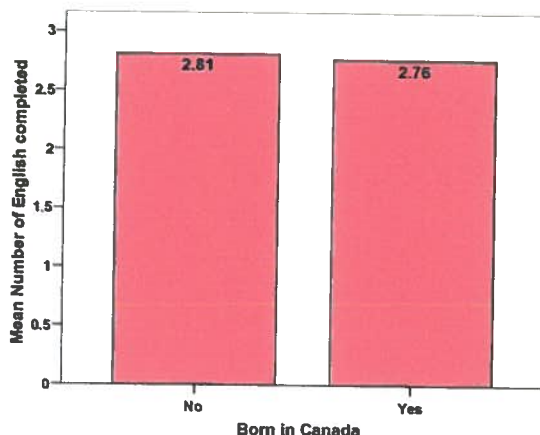


Figure 39: English Courses Completed vs. Student's Place of Birth

Table 70
English Courses Completed by Student's Place of Birth

Group Statistics					
Born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of English completed	No	31	2.81	.980	.176
	Yes	29	2.76	1.215	.226

Table 71
Independent Sample t-Tests for Hypothesis H5a –
No Significant Difference Was Found Between Groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English completed	Equal variances assumed	3.604	.063	.168	58	.867	.048	.284	-.521	.617
	Equal variances not assumed			.167	53.860	.868	.048	.286	-.526	.622

Hypothesis H5b

Vanier College hard technology students who were born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students who were not born in Canada.

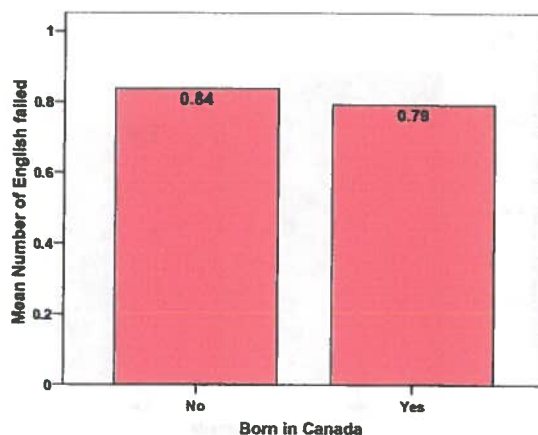


Figure 40: English Courses Failed vs. Student's Place of Birth

Table 72
English Courses Failed by Student's Place of Birth

Group Statistics					
	Born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Number of English failed	No	31	.84	1.214	.218
	Yes	29	.79	1.114	.207

Table 73
Independent Sample t-Tests for Hypothesis H5b –
No Significant Difference Was Found Between Groups

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Number of English failed	Equal variances assumed	.848	.361	.151	58	.880	.046	.301	-.558 .649
	Equal variances not assumed			.152	57.982	.880	.046	.301	-.556 .647

Hypothesis H5c

A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students who were not born in Canada.

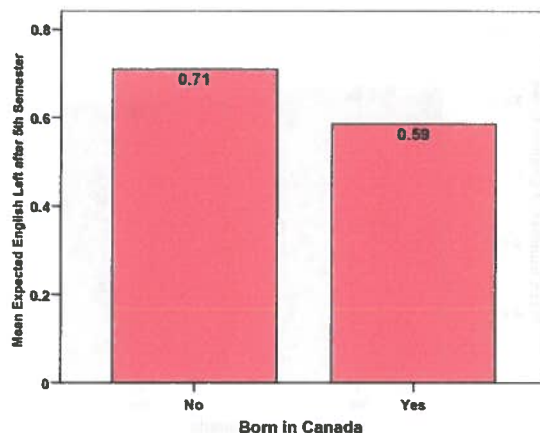


Figure 41: Students with English Courses Left after 6th Semester

Table 74
English Courses Left after 5th Semester by Student's Place of Birth

Group Statistics					
Born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Expected English Left after 5th Semester	No	31	.71	.461	.083
	Yes	29	.59	.501	.093

Table 75
Independent Sample t-Tests for Hypothesis H5c –
No Significant Difference Was Found Between Groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected English Left after 5th Semester	Equal variances assumed	3.482	.067	.994	58	.325	.123	.124	-.125	.372
	Equal variances not assumed			.991	56.721	.326	.123	.125	-.126	.373

Hypothesis H5d

Vanier College hard technology students who were born in Canada will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

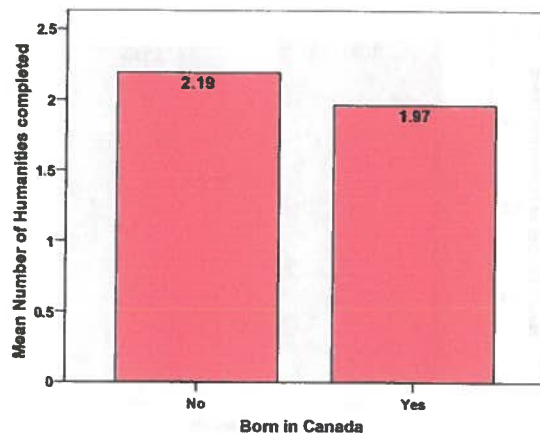


Figure 42: Humanities Completed vs. Student's Place of Birth

Table 76
Humanities Courses Completed by Student's Place of Birth
Group Statistics

Born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities completed	No	31	2.19	.833	.150
	Yes	29	1.97	1.149	.213

Table 77
Independent Sample t-Tests for Hypothesis H5d –
No Significant Difference Was Found Between Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of Humanities completed	Equal variances assumed	3.505	.066	.884	58	.380	.228	.258	-.288	.744
	Equal variances not assumed			.875	50.849	.386	.228	.261	-.295	.751

Hypothesis H5e

Vanier College hard technology students who were born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

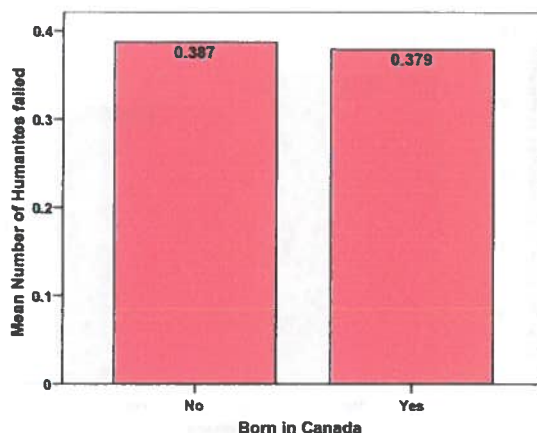


Figure 43: Humanities Courses Failed vs. Student's Place of Birth

Table 78
Humanities Courses Failed by Student's Place of Birth

Group Statistics

Born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities failed	No	31	.39	.715	.128
	Yes	29	.38	.728	.135

Table 79
Independent Sample t-Tests for Hypothesis H5e –
No Significant Difference Was Found Between Groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Number of Humanities failed	Equal variances assumed	.000	.999	.042	58	.967	.008	.186	-.365 .381
	Equal variances not assumed			.042	57.585	.967	.008	.186	-.366 .381

Hypothesis H5f

A higher percentage of Vanier College hard technology students who were born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students who were not born in Canada.

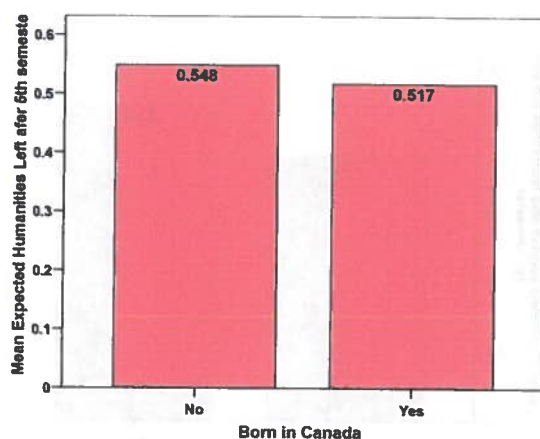


Figure 44: Students with Humanities Courses Left after 6th Semester

Table 80
Humanities Left after 6th Semester by Student's Place of Birth

Group Statistics

Born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Expected Humanities	No	31	.55	.506	.091
Left after 5th semester	Yes	29	.52	.509	.094

Table 81
Independent Sample t-Tests for Hypothesis H5f –
No Significant Difference Was Found Between Groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected Humanities Left after 5th semester	Equal variances assumed	.180	.673	.238	58	.813	.031	.131	-.231	.293
	Equal variances not assumed			.238	57.692	.813	.031	.131	-.231	.293

Hypothesis H5g

Vanier College hard technology students who were born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than will those students who were not born in Canada.

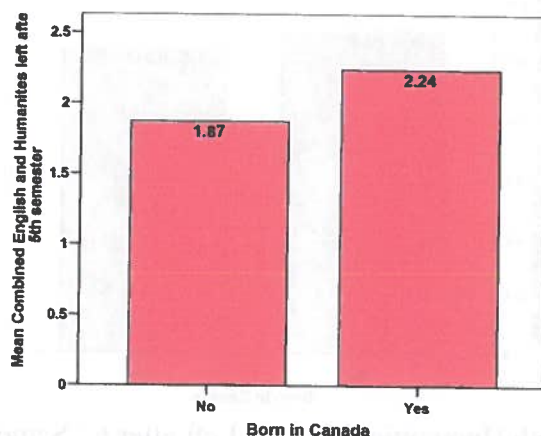


Figure 45: English and Humanities Courses Left after 6th Semester

Table 82
English and Humanities Left after 6th Semester
by Student's Place of Birth

Group Statistics					
	Born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Combined English and Humanities left after 5th semester	No	31	1.87	1.565	.281
	Yes	29	2.24	2.214	.411

Table 83
Independent Sample t-Tests for Hypothesis H5g –
No Significant Difference Was Found Between Groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Combined English and Humanities left after 5th semester	Equal variances assumed	7.127	.010	-.752	58	.455	-.370	.493	-1.356	.615
	Equal variances not assumed			-.744	50.076	.461	-.370	.498	-1.371	.630

Hypothesis H5h

Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

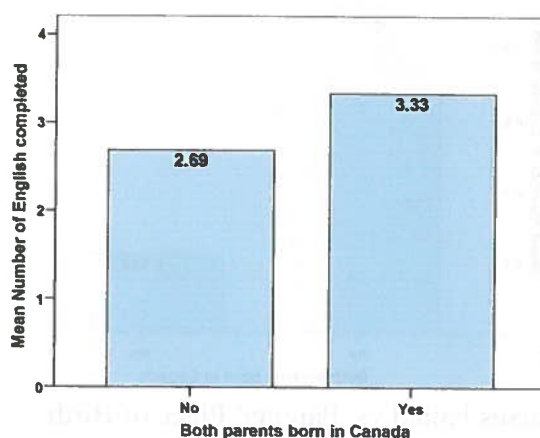


Figure 46: English Courses Completed vs. Parents' Place of Birth

Table 84
English Courses Completed by Parents' Place of Birth
Group Statistics

Both parents born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of English completed	No	51	2.69	1.086	.152
	Yes	9	3.33	1.000	.333

Table 85
Independent Sample t-Tests for Hypothesis H5h –
No Significant Difference Was Found Between Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of English completed	Equal variances assumed	.892	.349	-1.665	58	.101	-.647	.389	-1.425	.131
	Equal variances not assumed			-1.766	11.597	.104	-.647	.366	-1.448	.154

Hypothesis H5i

Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

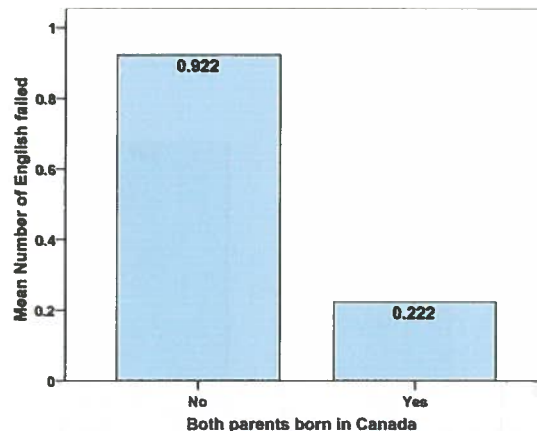


Figure 47: English Courses Failed vs. Parents' Place of Birth

Table 86
English Courses Failed by Parents' Place of Birth

Group Statistics

	Both parents born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Number of English failed	No	51	.92	1.214	.170
	Yes	9	.22	.441	.147

Table 87
Independent Sample t-Tests for Hypothesis H5i –
A Significant Difference Was Found Between the Two Groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Number of English failed	Equal variances assumed	8.975	.004	1.698	58	.095	.699	.412	-.125	1.524
	Equal variances not assumed			3.112	33.984	.004	.699	.225	.243	1.156

Hypothesis H5j

A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required English courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

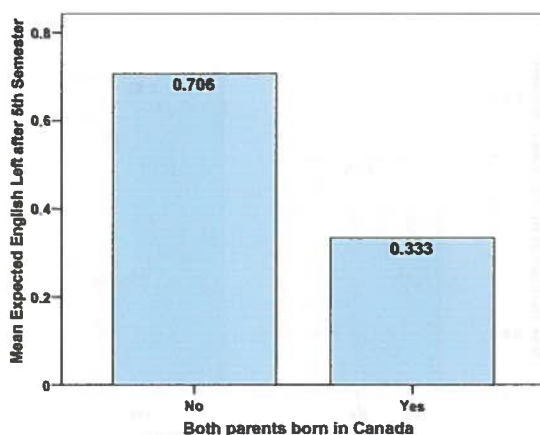


Figure 48: Students with English Courses Left after 6th Semester

Table 88
English Courses Left after 6th Semester by Parents' Place of Birth

Group Statistics					
	Both parents born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Expected English Left after 5th Semester	No	51	.71	.460	.064
	Yes	9	.33	.500	.167

Table 89
Independent Sample t-Tests for Hypothesis H5j –
A Significant Difference Was Found Between the Two Groups

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Expected English Left after 5th Semester	Equal variances assumed	.188	.666	2.212	58	.031	.373	.168	.035 .710
	Equal variances not assumed			2.085	10.533	.062	.373	.179	-.023 .768

Hypothesis H5k

Vanier College hard technology students whose parents were both born in Canada will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

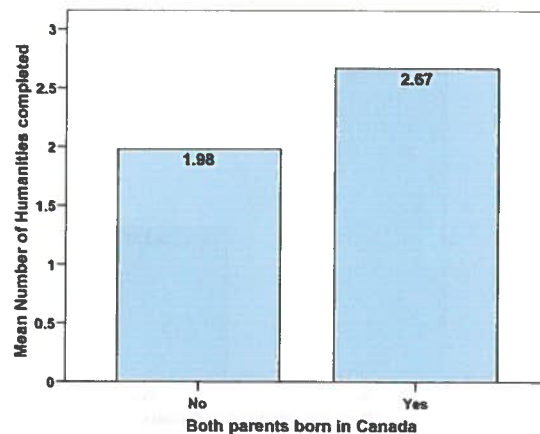


Figure 49: Humanities Completed vs. Parents' Place of Birth

Table 90
Humanities Courses Completed by Parents' Place of Birth
Group Statistics

Both parents born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities completed	No	51	1.98	1.010	.141
	Yes	9	2.67	.707	.236

Table 91
Independent Sample t-Tests for Hypothesis H5k –
No Significant Difference Was Found Between Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of Humanities completed	Equal variances assumed	1.309	.257	-1.950	58	.056	-.686	.352	-1.391	.018
	Equal variances not assumed			-2.497	14.493	.025	-.686	.275	-1.274	-.099

Hypothesis H5I

Vanier College hard technology students whose parents were both born in Canada will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

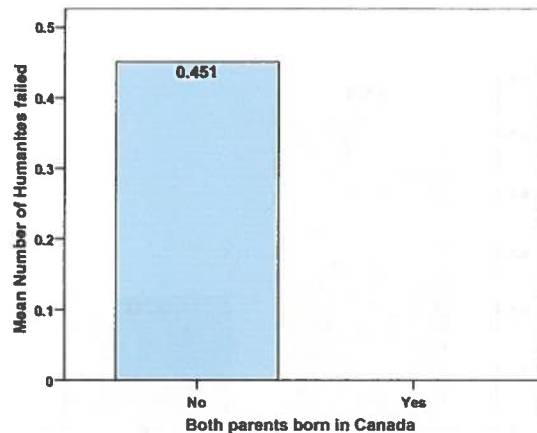


Figure 50: Humanities Courses Failed vs. Parents' Place of Birth

Table 92
Humanities Courses Failed by Parents' Place of Birth
Group Statistics

Both parents born in Canada		N	Mean	Std. Deviation	Std. Error Mean
Number of Humanities failed	No	51	.45	.757	.106
	Yes	9	.00	.000	.000

Table 93
Independent Sample t-Tests for Hypothesis H5j –
A Significant Difference Was Found Between the Two Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of Humanities failed	Equal variances assumed	15.748	.000	1.775	58	.081	.451	.254	-.057	.959
	Equal variances not assumed			4.256	50.000	.000	.451	.106	.238	.664

Hypothesis H5m

A higher percentage of Vanier College hard technology students whose parents were both born in Canada will have completed all of their required Humanities courses by the end of their fifth semester than will those students whose parents were not both born in Canada.

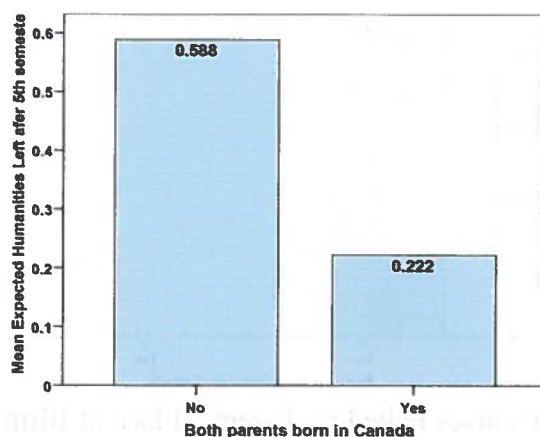


Figure 51: Students with Humanities Courses Left after 6th Semester

Table 94
Humanities Courses Left after 6th Semester by Parents' Place of Birth

Group Statistics

	Both parents born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Expected Humanities Left after 5th semester	No	51	.59	.497	.070
	Yes	9	.22	.441	.147

Table 95
Independent Sample t-Tests for Hypothesis H5m –
A Significant Difference Was Found Between the Two Groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Expected Humanities Left after 5th semester	Equal variances assumed	9.877	.003	2.067	58	.043	.366	.177	.012	.720
	Equal variances not assumed			2.251	11.894	.044	.366	.163	.011	.721

Hypothesis H5n

Vanier College hard technology students whose parents were both born in Canada will, on average, have fewer combined English and Humanities courses left to complete after they have completed all their program professional courses than will those students whose parents were not both born in Canada.

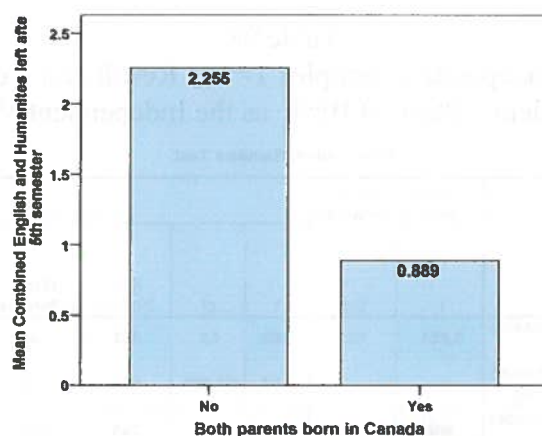


Figure 52: English and Humanities Courses Left after 6th Semester

Table 96
Total English and Humanities Left after 5th Semester
by Parents' Place of Birth

Group Statistics

	Both parents born in Canada	N	Mean	Std. Deviation	Std. Error Mean
Combined English and Humanities left after 5th semester	No	51	2.25	1.874	.262
	Yes	9	.89	1.691	.564

Table 97
Independent Sample t-Tests for Hypothesis H5m –
A Significant Difference Was Found Between the Two Groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
Combined English and Humanities left after 5th semester	Equal variances assumed	.824	.368	2.042	58	.046	1.366	.669	.027 2.705
	Equal variances not assumed			2.196	11.755	.049	1.366	.622	.008 2.724

Summary Independent Samples T-Test Tables for Research Question 5

Does a Vanier College hard technology student's cultural background (i.e. the student's place of birth and/or the student's parents' place of birth) have an impact on his or her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Table 98

Summary Table of Independent Samples T-Test Results for Research Question 5 with Students' Place of Birth as the Independent Variable

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of English completed	Equal variances assumed	3.604	.063	.168	58	.867	.048	.284	-.521	.617
	Equal variances not assumed			.167	53.860	.868	.048	.286	-.526	.622
Number of English failed	Equal variances assumed	.848	.361	.151	58	.880	.046	.301	-.558	.649
	Equal variances not assumed			.152	57.982	.880	.046	.301	-.556	.647
Expected English Left after 5th Semester	Equal variances assumed	3.482	.067	.994	58	.325	.123	.124	-.125	.372
	Equal variances not assumed			.991	56.721	.326	.123	.125	-.126	.373
Number of Humanities completed	Equal variances assumed	3.505	.066	.884	58	.380	.228	.258	-.288	.744
	Equal variances not assumed			.875	50.849	.386	.228	.261	-.295	.751
Number of Humanities failed	Equal variances assumed	.000	.999	.042	58	.967	.008	.186	-.365	.381
	Equal variances not assumed			.042	57.585	.967	.008	.186	-.366	.381
Expected Humanities Left after 5th semester	Equal variances assumed	.180	.673	.238	58	.813	.031	.131	-.231	.293
	Equal variances not assumed			.238	57.692	.813	.031	.131	-.231	.293
Combined English and Humanities left after 5th semester	Equal variances assumed	7.127	.010	-.752	58	.455	-.370	.493	-1.356	.615
	Equal variances not assumed			-.744	50.076	.461	-.370	.498	-1.371	.630

No Significant difference between groups was found for any of the Research Question 5 hypotheses where students' place of birth was the independent variable.

Table 99
Summary Table of Independent Samples T-Test Results for Research Question 5
with Parents' Place of Birth as the Independent Variable

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of English completed	Equal variances assumed	.892	.349	-1.67	58	.101	-.647	.389	-1.425	.131
	Equal variances not assumed			-1.77	11.597	.104	-.647	.366	-1.448	.154
Number of English failed	Equal variances assumed	8.975	.004	1.698	58	.095	.699	.412	-.125	1.524
	Equal variances not assumed			3.112	33.984	.004	.699	.225	.243	1.156
Expected English Left after 5th Semester	Equal variances assumed	.188	.666	2.212	58	.031	.373	.168	.035	.710
	Equal variances not assumed			2.085	10.533	.062	.373	.179	-.023	.768
Number of Humanities completed	Equal variances assumed	1.309	.257	-1.95	58	.056	-.686	.352	-1.391	.018
	Equal variances not assumed			-2.50	14.493	.025	-.686	.275	-1.274	-.099
Number of Humanities failed	Equal variances assumed	15.748	.000	1.775	58	.081	.451	.254	-.057	.959
	Equal variances not assumed			4.256	50.000	.000	.451	.106	.238	.664
Expected Humanities Left after 5th semester	Equal variances assumed	9.877	.003	2.067	58	.043	.366	.177	.012	.720
	Equal variances not assumed			2.251	11.894	.044	.366	.163	.011	.721
Combined English and Humanities left after 5th semester	Equal variances assumed	.824	.368	2.042	58	.046	1.366	.669	.027	2.705
	Equal variances not assumed			2.196	11.755	.049	1.366	.622	.008	2.724

With Both Parents Born in Canada or Not-Both-Parents born in Canada as the independent variable, five of the seven Research Question 5 hypotheses were found to have significance.

APPENDIX K

RESEARCH QUESTION 6 RESULTS

Research Question	Findings	Implications
1. What are the most common reasons for...?
2. How do these reasons vary across...?
3. What are the most common reasons for...?
4. How do these reasons vary across...?
5. What are the most common reasons for...?
6. How do these reasons vary across...?
7. What are the most common reasons for...?
8. How do these reasons vary across...?
9. What are the most common reasons for...?
10. How do these reasons vary across...?

Hypothesis H6a

Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to speak English than those students who were born in Canada.

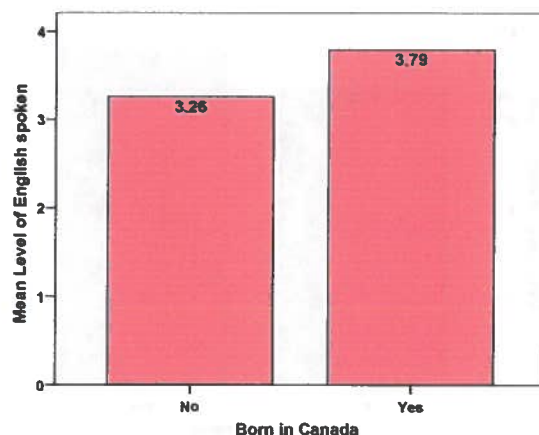


Figure 53: Mean Level English Spoken vs. Student's Place of Birth

Table 100
Level of English Spoken by Student's Place of Birth
Ranks

Born in Canada		N	Mean Rank
Level of English spoken	No	31	24.71
	Yes	29	36.69
	Total	60	

Table 101
Hypothesis H6a – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics^{a,b}

	Level of English spoken
Chi-Square	9.888
df	1
Asymp. Sig.	.002

a. Kruskal Wallis Test

b. Grouping Variable: Born in Canada

Hypothesis H6b

Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to read English than those students who were born in Canada.

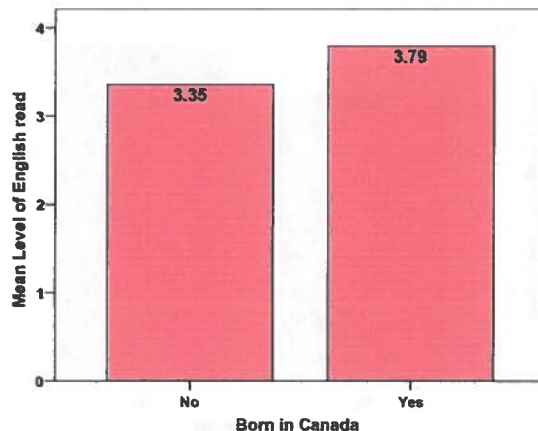


Figure 54: Mean Level English Read vs. Student's Place of Birth

Table 102
Level of English Read by Student's Place of Birth
Ranks

Born in Canada		N	Mean Rank
Level of English read	No	31	25.26
	Yes	29	36.10
	Total	60	

Table 103

Hypothesis H6b – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics^{a,b}

	Level of English read
Chi-Square	7.931
df	1
Asymp. Sig.	.005

a. Kruskal Wallis Test

b. Grouping Variable: Born in Canada

Hypothesis H6c

Vanier College hard technology students who were not born in Canada will, on average, rank themselves as lower in their ability to write English than those students who were born in Canada.

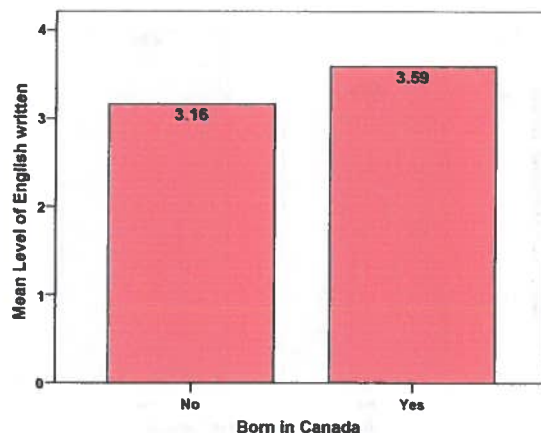


Figure 55: Mean Level English Written vs. Student's Place of Birth

Table 104
Level of English Written by Student's Place of Birth

Ranks			
		Born in Canada	
Level of English written	No	N	Mean Rank
	Yes	31	25.82
	Total	29	35.50
		60	

Table 105
Hypothesis H6c – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics ^{a, b}	
	Level of English written
Chi-Square	5.586
df	1
Asymp. Sig.	.018

a. Kruskal Wallis Test

b. Grouping Variable: Born in Canada

Hypothesis H6d

Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to speak English than those students whose parents were both born in Canada.

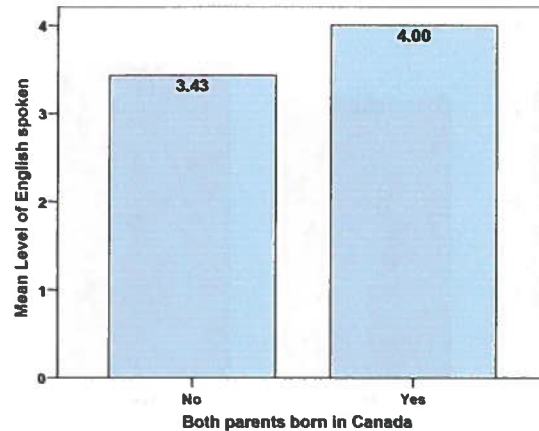


Figure 56: Mean Level English Spoken vs. Parents' Place of Birth

Table 106
Level of English Spoken by Parents' Place of Birth

Ranks			
Both parents born in Canada		N	Mean Rank
Level of English spoken	No	51	28.65
	Yes	9	41.00
	Total	60	

Table 107
Hypothesis H6d – Note a **significant difference** was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics ^{a,b}	
	Level of English spoken
Chi-Square	5.368
df	1
Asymp. Sig.	.021

a. Kruskal Wallis Test

b. Grouping Variable: Both parents born in Canada

Hypothesis H6e

Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to read English than those students whose parents were both born in Canada.

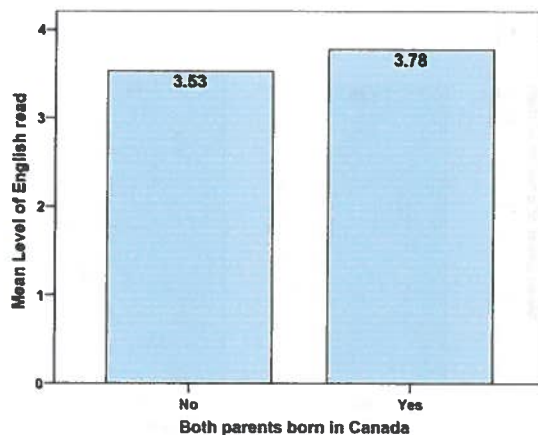


Figure 57: Mean Level English Read vs. Parents' Place of Birth

Table 108
Level of English Read by Parents' Place of Birth

Ranks			
Both parents born in Canada		N	Mean Rank
Level of English read	No	51	29.59
	Yes	9	35.67
	Total	60	

Table 109
Hypothesis H6e – Note a no significant difference was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics^{a,b}

	Level of English read
Chi-Square	1.272
df	1
Asymp. Sig.	.259

a. Kruskal Wallis Test

b. Grouping Variable: Both parents born in Canada

Hypothesis H6f

Vanier College hard technology students whose parents were not both born in Canada will, on average, rank themselves as lower in their ability to write English than those students whose parents were both born in Canada.

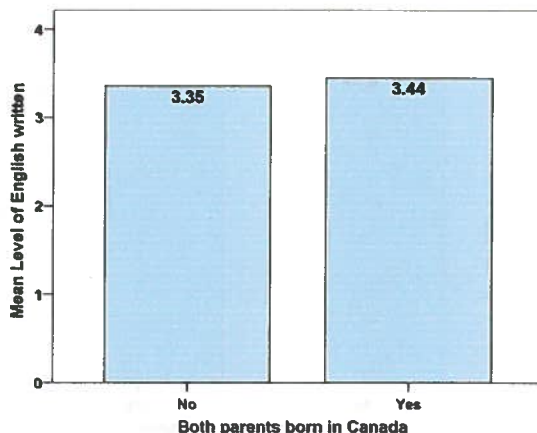


Figure 58: Mean Level English Written vs. Parents' Place of Birth

Table 110
Level of English Written by Parents' Place of Birth

Ranks			
Both parents born in Canada		N	Mean Rank
Level of English written	No	51	30.19
	Yes	9	32.28
	Total	60	

Table 111
Hypothesis H6f – Note a no significant difference was found between how the L1-Not-English and L1-English students rank themselves

Test Statistics^{a, b}

	Level of English written
Chi-Square	.133
df	1
Asymp. Sig.	.715

a. Kruskal Wallis Test

b. Grouping Variable: Both parents born in Canada

Summary Kruskal-Wallis Test Table for Research Question 6

Does a Vanier College hard technology student whose cultural background is not Canadian perceive him- or herself to be less fluent in speaking, reading and writing in English than a student whose cultural background is Canadian?

Table 112

Summary table of Kruskal-Wallis Test for Research Question 6 with Students' Place of Birth (Canada, Not-Canada) as the Independent Variable

Test Statistics^{a,b}

	Level of English spoken	Level of English read	Level of English written
Chi-Square	9.888	7.931	5.586
df	1	1	1
Asymp. Sig.	.002	.005	.018

a. Kruskal Wallis Test

b. Grouping Variable: Born in Canada

Table 113

Summary table of Kruskal-Wallis Test for Research Question 6 with Parents' Place of Birth (Both-Canada, Not-Both-Canada) as the Independent Variable

Test Statistics^{a,b}

	Level of English spoken	Level of English read	Level of English written
Chi-Square	5.368	1.272	.133
df	1	1	1
Asymp. Sig.	.021	.259	.715

a. Kruskal Wallis Test

b. Grouping Variable: Both parents born in Canada

Note that with the Students' place of birth as the independent variable significant difference between groups was found for all hypotheses: H6a, H6b & H6c; but with Parents' place of birth as the independent variable, significant difference was found for only the first hypothesis, 6Hd

Summary Kruskal-Wallis Test Table for Research Question 6

These Kruskal-Wallis test results indicate that there is a significant difference in the distribution of the dependent variable across the independent variable categories. The results of the Kruskal-Wallis test are as follows:

Table 1. Summary of Kruskal-Wallis Test Results for Research Question 6

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.142	2	.571	1.142	.328
Within Groups	1.142	10	.114		
Total	2.284	12			

APPENDIX L

RESEARCH QUESTION 7

The following table presents the results of the Kruskal-Wallis test for Research Question 7. The results indicate that there is a significant difference in the distribution of the dependent variable across the independent variable categories.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.142	2	.571	1.142	.328
Within Groups	1.142	10	.114		
Total	2.284	12			

Hypothesis H7a

Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

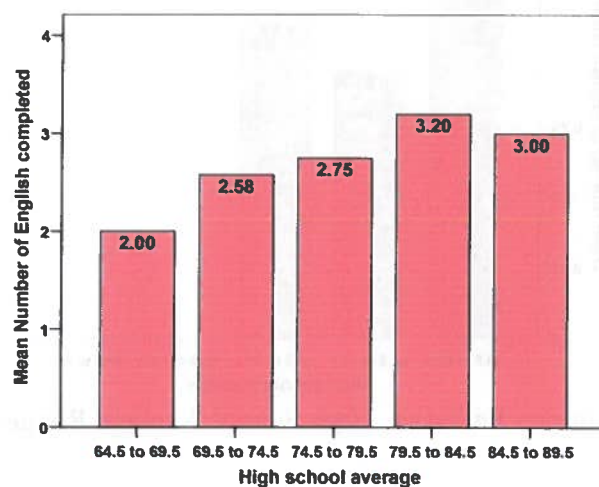


Figure 59: English Courses Completed vs. High School Average Ranges

Table 114

One-Way ANOVA Table for English Courses Completed by H.S. Average Ranges

ANOVA					
Number of English completed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.201	4	1.300	1.091	.373
Within Groups	52.432	44	1.192		
Total	57.633	48			

Hypothesis H7b

Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

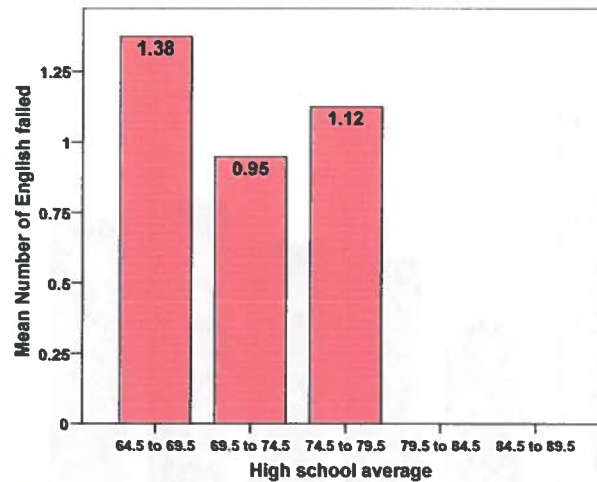


Figure 60: English Courses Failed vs. High School Average Ranges

Table 115

One-Way ANOVA Table for English Courses Failed by H.S. Average Ranges

ANOVA

Number of English failed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.346	4	1.836	1.251	.303
Within Groups	64.572	44	1.468		
Total	71.918	48			

Hypothesis H7c

A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required English courses by the end of the fifth semester than will those students that are in a lower high school average bracket.

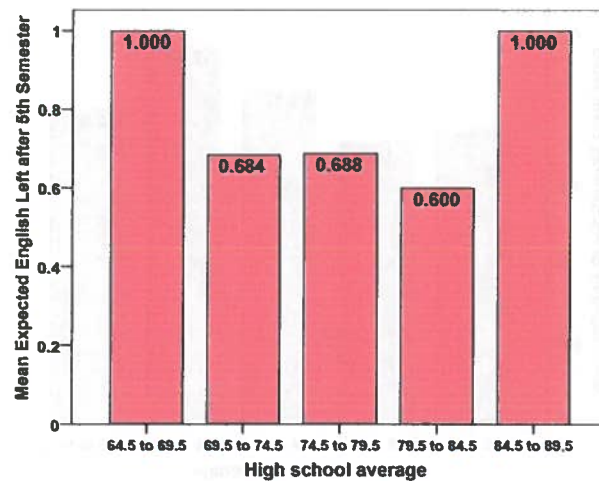


Figure 61: English Courses Left After the 5th Semester vs. High School Average Ranges

Table 116

One-Way ANOVA Table for English Courses Left After the 5th Semester by High School Average Ranges

ANOVA

Expected English Left after 5th Semester					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.808	4	.202	1.017	.409
Within Groups	8.743	44	.199		
Total	9.551	48			

Hypothesis H7d

Vanier College hard technology students who are in a higher high school average bracket, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

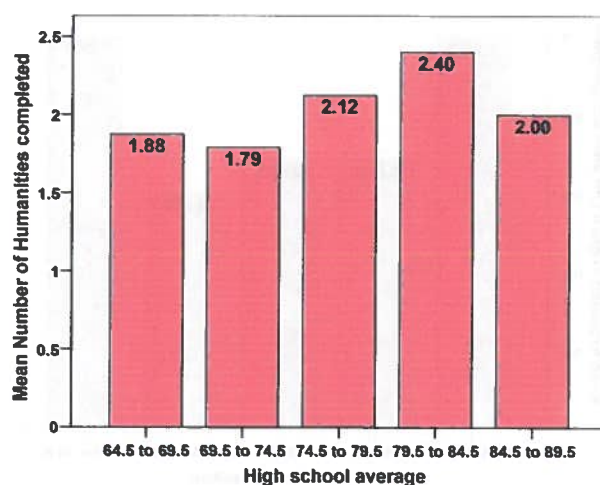


Figure 62: Humanities Courses Completed vs. High School Average Ranges

Table 117

One-Way ANOVA Table for Humanities Courses Completed by High School. Average Ranges

ANOVA

Number of Humanities completed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.997	4	.499	.467	.759
Within Groups	46.983	44	1.068		
Total	48.980	48			

Hypothesis H7e

Vanier College hard technology students who are in a higher high school average bracket, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are in a lower high school average bracket.

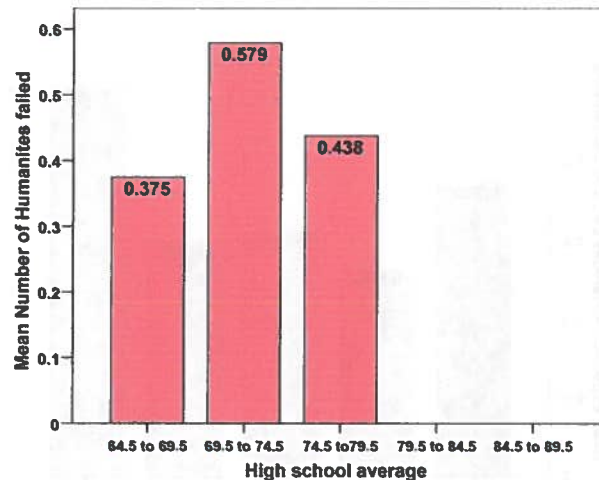


Figure 63: Humanities Courses Failed vs. High School Average Ranges

Table 118

One-Way ANOVA Table for Humanities Courses Failed by H.S. Average Ranges

ANOVA

Number of Humanities failed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.556	4	.389	.647	.632
Within Groups	26.444	44	.601		
Total	28.000	48			

Hypothesis H7f

A higher percentage of Vanier College hard technology students who are in a higher high school average bracket will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are in a lower high school average bracket.

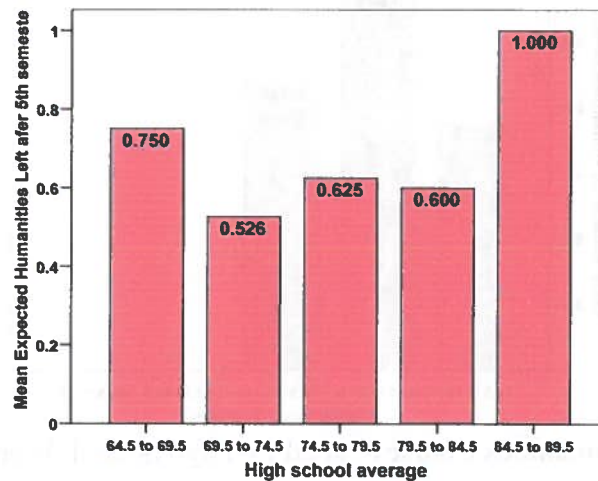


Figure 64: Humanities Courses Left After the 5th Semester vs. High School Average Ranges

Table 119

One-Way ANOVA Table for Humanities Courses Left After the 5th Semester by H.S. Average Ranges

ANOVA					
Expected Humanities Left after 5th semester					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.446	4	.111	.438	.780
Within Groups	11.187	44	.254		
Total	11.633	48			

Hypothesis H7g

Vanier College hard technology students who are in a higher high school average bracket, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses than will those students that are in a lower high school average bracket.

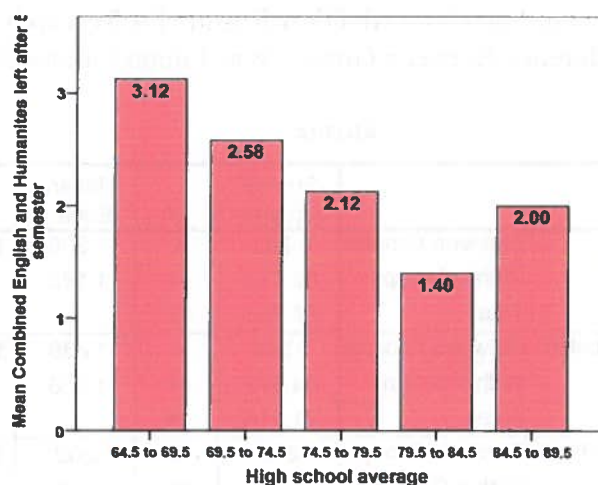


Figure 65: Total of English & Humanities Courses Left After 5th Semester vs. High School Average Ranges

Table 120

One-Way ANOVA Table for Total English & Humanities Left After 5th Semester by High School Average Ranges

ANOVA

Combined English and Humanites left after 5th semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.176	4	2.794	.748	.565
Within Groups	164.457	44	3.738		
Total	175.633	48			

Summary ANOVA table for Research Question 7

Does a Vanier College hard technology student's high school average have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

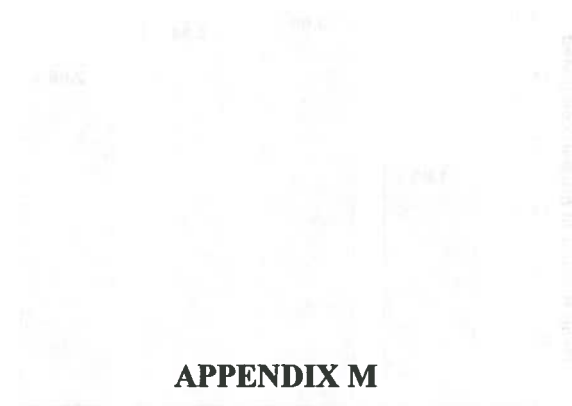
Table 121

Summary Table of One-Way ANOVA Results for Research Question 7.
No Significant Difference Between Groups Was Found for any of the Hypotheses

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Number of English completed	Between Groups	5.201	4	1.300	1.091	.373
	Within Groups	52.432	44	1.192		
	Total	57.633	48			
Number of English failed	Between Groups	7.346	4	1.836	1.251	.303
	Within Groups	64.572	44	1.468		
	Total	71.918	48			
Expected English Left after 5th Semester	Between Groups	.808	4	.202	1.017	.409
	Within Groups	8.743	44	.199		
	Total	9.551	48			
Number of Humanities completed	Between Groups	1.997	4	.499	.467	.759
	Within Groups	46.983	44	1.068		
	Total	48.980	48			
Number of Humanites failed	Between Groups	1.556	4	.389	.647	.632
	Within Groups	26.444	44	.601		
	Total	28.000	48			
Expected Humanities Left afer 5th semester	Between Groups	.446	4	.111	.438	.780
	Within Groups	11.187	44	.254		
	Total	11.633	48			
Combined English and Humanites left after 5th semester	Between Groups	11.176	4	2.794	.748	.565
	Within Groups	164.457	44	3.738		
	Total	175.633	48			

Appendix B contains the results of the research question 8. The results are presented in a table and a figure. The table shows the mean scores for each group and the standard deviation. The figure is a bar chart showing the mean scores for each group. The results show that the experimental group had a significantly higher mean score than the control group.



APPENDIX M

RESEARCH QUESTION 8 RESULTS

The results of the research question 8 are presented in the following table and figure.

The table shows the mean scores for each group and the standard deviation. The figure is a bar chart showing the mean scores for each group.

Table 1

Group	Mean score	Standard deviation
Experimental	85	10
Control	75	10

Hypothesis H8a

Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required four English courses by the end of their fifth semester than will those students that are placed in lower level English courses.

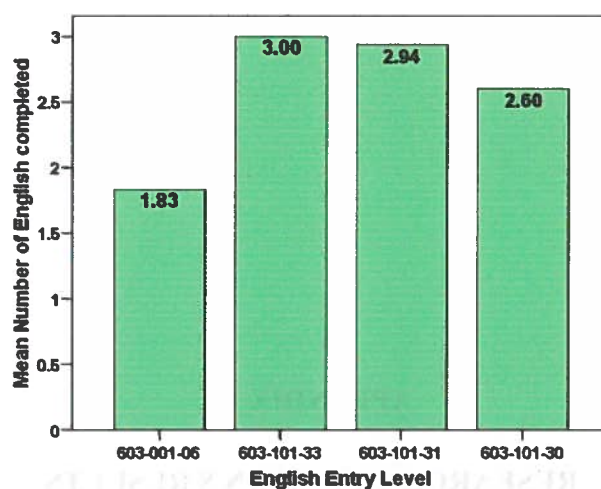


Figure 66: English Courses Completed vs. English Entry Level

Table 122
Table for English Courses Completed by English Entry Level

ANOVA

Number of English completed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.769	3	2.256	2.009	.125
Within Groups	53.904	48	1.123		
Total	60.673	51			

Hypothesis H8b

Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer English courses by the end of their fifth semester than will those students that are placed in lower level English courses.

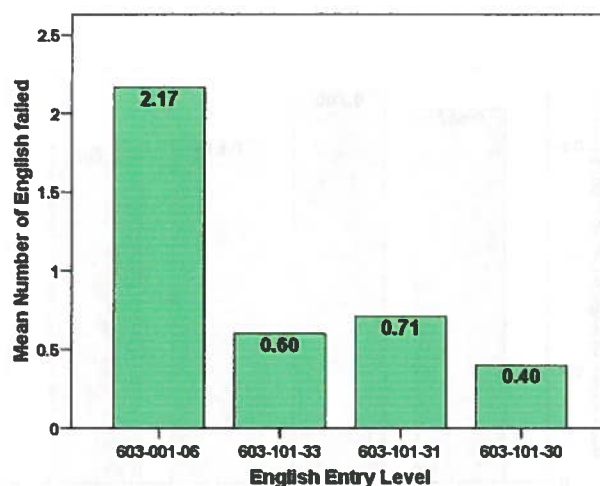


Figure 67: English Courses Failed vs. English Entry Level

Table 123

Table for English Courses Failed by English Entry Level –
Significance Was Found

ANOVA

Number of English failed

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.622	3	4.207	3.974	.013
Within Groups	50.820	48	1.059		
Total	63.442	51			

Hypothesis H8c

A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed all of their required English courses by the end of the fifth semester than will those students that are placed in lower level English courses.

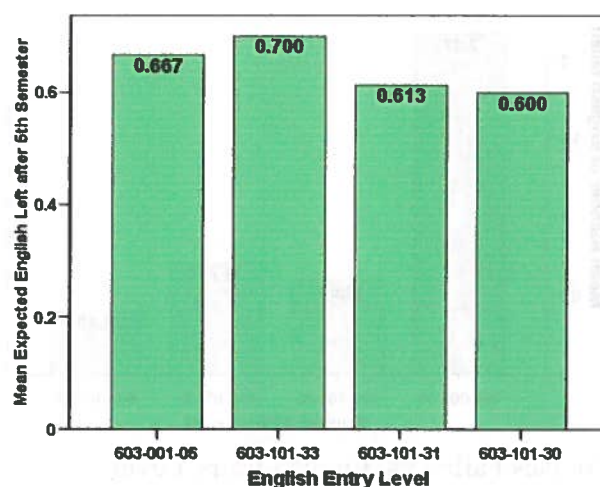


Figure 68: English Courses Left After 5th Semester vs. English Entry Level

Table 124

Table for English Courses Left After 5th Semester by English Entry Level

ANOVA

Expected English Left after 5th Semester					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.070	3	.023	.093	.964
Within Groups	11.988	48	.250		
Total	12.058	51			

Hypothesis H8d

Vanier College hard technology students who are placed in a higher level English course, will, on average, have completed more of the required three Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses.

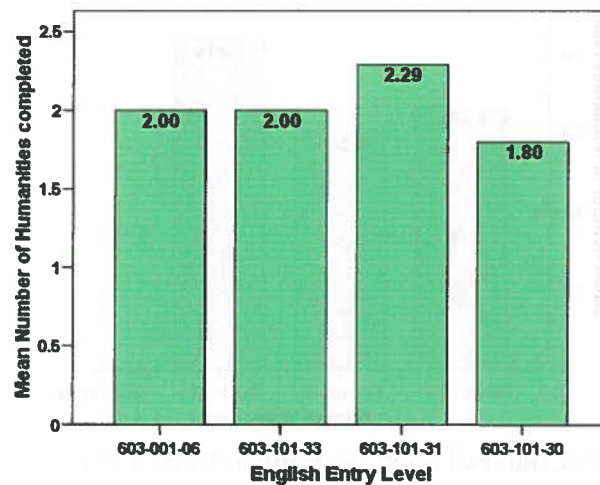


Figure 69: Humanities Courses Completed vs. English Entry Level

Table 125

Table for Humanities Courses Completed by English Entry Level

ANOVA

Number of Humanities completed					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.582	3	.527	.560	.644
Within Groups	45.187	48	.941		
Total	46.769	51			

Hypothesis H8e

Vanier College hard technology students who are placed in a higher level English course, will, on average, have failed fewer Humanities courses by the end of their fifth semester than will those students that are placed in lower level English courses.

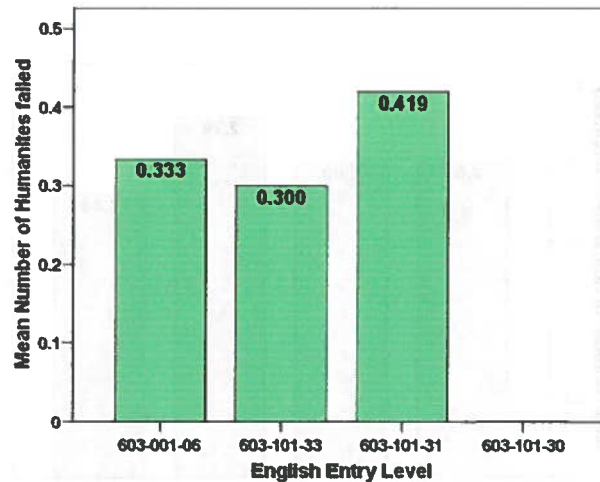


Figure 70: Humanities Courses Failed vs. English Entry Level

Table 126

Table for Humanities Courses Failed by English Entry Level

ANOVA

Number of Humanities failed

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.788	3	.263	.601	.618
Within Groups	20.982	48	.437		
Total	21.769	51			

Hypothesis H8f

A higher percentage of Vanier College hard technology students who are placed in a higher level English course will have completed all of their required Humanities courses by the end of the fifth semester than will those students that are placed in lower level English courses.

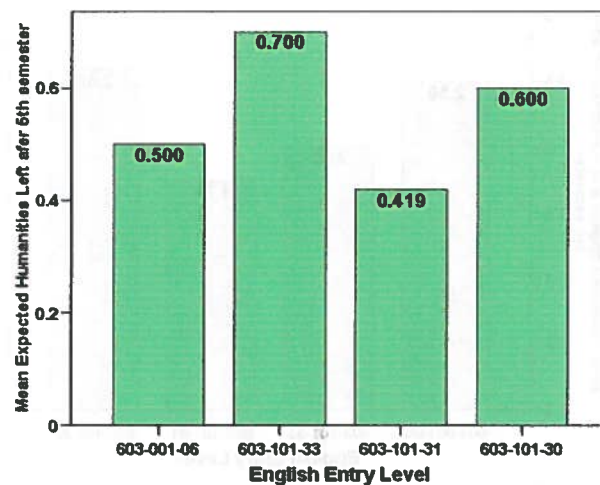


Figure 71: Humanities Courses Left After 5th Semester vs. English Entry Level

Table 127

Table for Humanities Courses Left After 5th Semester by English Entry Level

ANOVA

Expected Humanities Left after 5th semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.652	3	.217	.844	.476
Within Groups	12.348	48	.257		
Total	13.000	51			

Hypothesis H8g

Vanier College hard technology students who are placed in a higher level English course, will, on average, have fewer combined English and Humanities courses left to complete after they have completed all of their program professional courses semester than will those students that are placed in lower level English courses.

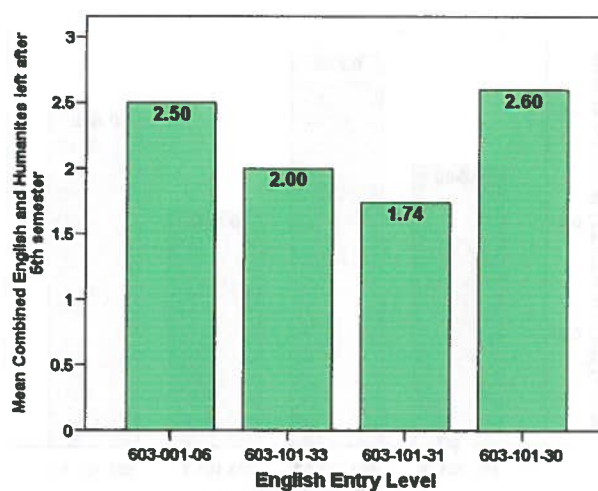


Figure 72: Total of Humanities & English Courses Left After 5th Semester vs. English Entry Level

Table 128

Table for Total Humanities & English Courses Left After 5th Semester by English Entry Level

ANOVA

Combined English and Humanites left after 5th semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.288	3	1.763	.479	.698
Within Groups	176.635	48	3.680		
Total	181.923	51			

Kruskal-Wallis Test Table for Research Question 8

Does a Vanier College hard technology student's English course placement level have an impact on his/her ability to succeed in the required English and/or Humanities courses within the three year technology program timeframe?

Table 129:
Summary Table of One-Way Anova Results for Research Question 8.
Significant Difference Between Groups Was Found for Only Hypotheses H8b.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Number of English completed	Between Groups	6.769	3	2.256	2.009	.125
	Within Groups	53.904	48	1.123		
	Total	60.673	51			
Number of English failed	Between Groups	12.622	3	4.207	3.974	.013
	Within Groups	50.820	48	1.059		
	Total	63.442	51			
Expected English Left after 5th Semester	Between Groups	.070	3	.023	.093	.964
	Within Groups	11.988	48	.250		
	Total	12.058	51			
Number of Humanities completed	Between Groups	1.582	3	.527	.560	.644
	Within Groups	45.187	48	.941		
	Total	46.769	51			
Number of Humanites failed	Between Groups	.788	3	.263	.601	.618
	Within Groups	20.982	48	.437		
	Total	21.769	51			
Expected Humanities Left afer 5th semester	Between Groups	.652	3	.217	.844	.476
	Within Groups	12.348	48	.257		
	Total	13.000	51			
Combined English and Humanites left after 5th semester	Between Groups	5.288	3	1.763	.479	.698
	Within Groups	176.635	48	3.680		
	Total	181.923	51			

Kruskal-Wallis Test Table for Research Question 2

The Kruskal-Wallis test is a non-parametric test used to compare the medians of three or more independent groups. It is based on the ranks of the data points. The test statistic is calculated as follows:

$$H = \frac{12}{n(n+1)} \sum_{j=1}^k \frac{R_j^2}{n_j} - \frac{3(n+1)}{2}$$

where n is the total number of observations, n_j is the number of observations in group j , and R_j is the sum of ranks for group j . The test statistic H follows a chi-square distribution with $k-1$ degrees of freedom.

Table 1 shows the results of the Kruskal-Wallis test for Research Question 2. The test statistic is 12.34, which is greater than the critical value of 11.34 at the 0.05 significance level. Therefore, we reject the null hypothesis and conclude that there is a significant difference in the medians of the three groups.

TABLE 1

Group	Median	Q1	Q3	Min	Max	n
Group 1	1.5	1.0	2.0	0.5	3.0	10
Group 2	2.0	1.5	2.5	0.5	3.5	10
Group 3	2.5	2.0	3.0	1.0	4.0	10
Total						30

APPENDIX N

SUMMARY OF HYPOTHESES TEST RESULTS

Hypothesis	Test Statistic	Critical Value	Decision
H1: There is a significant difference in the medians of the three groups.	12.34	11.34	Reject H0
H2: There is no significant difference in the medians of the three groups.	12.34	11.34	Reject H0

Hypothesis	<i>f</i>	<i>t</i>	χ^2	<i>p</i>
Primary Home Language (English, Not-English):				
Hypothesis 1a (English completions)	0.369	-0.432		0.667
Hypothesis 1b (English failures)	0.228	0.090		0.928
Hypothesis 1c (Completed all English by end of 5 th semester)	0.195	0.217		0.829
Hypothesis 1d (Humanities completions)	3.793	-1.608		0.113
Hypothesis 1e (Humanities failures)	7.489	1.266		0.215
Hypothesis 1f (Completed all Humanities by end of 5 th semester)	1.943	1.156		0.253
Hypothesis 1g (Combined English and Humanities left)	1.925	1.226		0.225
Hypothesis 2a (Ability to speak English)			20.278	0.000
Hypothesis 2b (Ability to read English)			8.202	0.004
Hypothesis 2c (Ability to write English)			5.189	0.023
High School Language of Instruction (English, Not-English):				
Hypothesis 3a (English completions)	0.010	0.675		0.502
Hypothesis 3b (English failures)	1.222	-0.907		0.368
Hypothesis 3c (Completed all English by end of 5 th semester)	2.411	-0.834		0.408
Hypothesis 3d (Humanities completions)	2.819	-0.844		0.402
Hypothesis 3e (Humanities failures)	0.545	0.595		0.554
Hypothesis 3f (Completed all Humanities by end of 5 th semester)	0.313	0.307		0.760
Hypothesis 3g (Combined English and Humanities left)	0.707	0.224		0.824
Hypothesis 4a (Ability to speak English)			13.076	0.000
Hypothesis 4b (Ability to read English)			3.000	0.083
Hypothesis 4c (Ability to write English)			2.124	0.145
Student's Place of Birth(Canada, Not-Canada):				
Hypothesis 5a (English completions)	3.604	0.168		0.867
Hypothesis 5b (English failures)	0.848	0.151		0.880
Hypothesis 5c (Completed all English by end of 5 th semester)	3.482	0.994		0.325
Hypothesis 5d (Humanities completions)	3.505	0.884		0.380
Hypothesis 5e (Humanities failures)	0.000	0.042		0.967
Hypothesis 5f (Completed all Humanities by end of 5 th semester)	0.180	0.238		0.813
Hypothesis 5g (Combined English and Humanities left)	7.127	0.744		0.461
Hypothesis 6a (Ability to speak English)			9.888	0.002
Hypothesis 6b (Ability to read English)			7.931	0.005
Hypothesis 6c (Ability to write English)			5.586	0.018
Both Parents Born in Canada (no, yes):				
Hypothesis 5h (English completions)	0.892	-1.665		0.101
Hypothesis 5i (English failures)	8.972	3.112		0.004
Hypothesis 5j (Completed all English by end of 5 th semester)	0.188	2.212		0.031
Hypothesis 5k (Humanities completions)	1.309	-1.950		0.056
Hypothesis 5l (Humanities failures)	15.748	4.256		0.000
Hypothesis 5m (Completed all Humanities by end of 5 th semester)	9.877	2.251		0.044
Hypothesis 5n (Combined English and Humanities left)	0.842	2.042		0.046
Hypothesis 6d (Ability to speak English)			5.368	0.021
Hypothesis 6e (Ability to read English)			1.272	0.259
Hypothesis 6f (Ability to write English)			0.133	0.715
High School Average (8 ranges):				
Hypothesis 7a (English completions)	1.091			0.373
Hypothesis 7b (English failures)	1.251			0.303
Hypothesis 7c (Completed all English by end of 5 th semester)	1.017			0.409
Hypothesis 7d (Humanities completions)	0.467			0.759
Hypothesis 7e (Humanities failures)	0.647			0.632
Hypothesis 7f (Completed all Humanities by end of 5 th semester)	0.438			0.780
Hypothesis 7g (Combined English and Humanities left)	0.748			0.565
English Entry Placement Level (4 levels):				
Hypothesis 8a (English completions)	2.009			0.125
Hypothesis 8b (English failures)	3.974			0.013
Hypothesis 8c (Completed all English by end of 5 th semester)	0.093			0.964
Hypothesis 8d (Humanities completions)	0.560			0.644
Hypothesis 8e (Humanities failures)	0.601			0.618
Hypothesis 8f (Completed all Humanities by end of 5 th semester)	0.844			0.476
Hypothesis 8g (Combined English and Humanities left)	0.479			0.698

DISCRIMINANT ANALYSES RESULTS

Table 131

Dependent Variable: Number of English Completed
Summary of Canonical Discriminant Functions: Structured Matrix

Structure Matrix

	Function
	1
Father Born in Canada	1.000
Both parents born in Canada^a	1.000
Mother Born in Canada ^a	.827
Both parents born outside Canada ^a	-.793
H.S. Language - English - not English ^a	-.392
Born in Canada ^a	.392
Primary home language English - not English ^a	-.386
Number of languages spoken ^a	-.386
English Entry Level ^a	.288
High school average ^a	-.251
Years in Canada ^a	.167

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 132

Dependent Variable: Number of Humanities Completed

Variables Not in the Analysis

Step		Tolerance	Min. Tolerance	Sig. of F to Enter	Wilks' Lambda
0	Primary home language English - not English	1.000	1.000	.531	.943
	Born in Canada	1.000	1.000	.352	.917
	Mother Born in Canada	1.000	1.000	.459	.933
	Father Born in Canada	1.000	1.000	.050	.812
	Both parents born in Canada	1.000	1.000	.050	.812
	Both parents born outside Canada	1.000	1.000	.608	.952
	H.S. Language - English - not English	1.000	1.000	.188	.880
	High school average	1.000	1.000	.594	.951
	Years in Canada	1.000	1.000	.336	.914
	Number of languages spoken	1.000	1.000	.181	.878
	English Entry Level	1.000	1.000	.179	.878

Analysis was not completed as no variable had a significance of less than 0.050 although two variables had a significance of exactly 0.050

Table 133
Dependent Variable: Number of English Failed
Summary of Canonical Discriminant Functions: Structured Matrix

Structure Matrix

	Function
	1
English Entry Level	1.000
Primary home language English - not English ^a	-.434
Years in Canada ^a	.433
Both parents born outside Canada ^a	-.415
Mother Born in Canada ^a	.415
Born in Canada ^a	.274
Father Born in Canada ^a	.267
Both parents born in Canada ^a	.267
Number of languages spoken ^a	-.230
High school average ^a	.157
H.S. Language - English - not English ^a	-.098

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
 Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 134
Dependent Variable: Number of Humanities Failed
Summary of Canonical Discriminant Functions: Structured Matrix

Variables Not in the Analysis

Step		Tolerance	Min. Tolerance	Sig. of F to Enter	Wilks' Lambda
0	Primary home language English - not English	1.000	1.000	.732	.966
	Born in Canada	1.000	1.000	.450	.932
	Mother Born in Canada	1.000	1.000	.071	.829
	Father Born in Canada	1.000	1.000	.200	.884
	Both parents born in Canada	1.000	1.000	.200	.884
	Both parents born outside Canada	1.000	1.000	.234	.892
	H.S. Language - English - not English	1.000	1.000	.792	.973
	High school average	1.000	1.000	.854	.979
	Years in Canada	1.000	1.000	.881	.982
	Number of languages spoken	1.000	1.000	.263	.899
	English Entry Level	1.000	1.000	.850	.979

Analysis was not completed as no variable had a significance of less than 0.050.

Table 135
 Dependent Variable: Expected English Left After 5th Semester (Yes, No)
 Summary of Canonical Discriminant Functions: Structured Matrix

Structure Matrix

	Function
	1
Father Born in Canada	1.000
Both parents born in Canada	1.000
Mother Born in Canada ^a	.802
Both parents born outside Canada ^a	-.759
Primary home language English - not English ^a	-.402
H.S. Language - English - not English ^a	-.393
Number of languages spoken ^a	-.382
Born in Canada ^a	.318
English Entry Level ^a	.298
High school average ^a	-.216
Years in Canada ^a	.160

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
 Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 136
 Dependent Variable: Expected Humanities Left After 5th Semester (Yes, No)
 Summary of Canonical Discriminant Functions: Structured Matrix

Structure Matrix

	Function
	1
Father Born in Canada	1.000
Both parents born in Canada	1.000
Mother Born in Canada ^a	.822
Both parents born outside Canada ^a	-.757
Number of languages spoken ^a	-.424
Primary home language English - not English ^a	-.413
Born in Canada ^a	.406
H.S. Language - English - not English ^a	-.396
English Entry Level ^a	.323
Years in Canada ^a	.292
High school average ^a	-.104

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
 Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 137
 Dependent Variable: Combined English and Humanities left after 5th semester
 Summary of Canonical Discriminant Functions: Structured Matrix

Structure Matrix

	Function
	1
Father Born in Canada	1.000
Both parents born in Canada	1.000
Mother Born in Canada ^a	.811
Both parents born outside Canada ^a	-.770
Number of languages spoken ^a	-.443
Primary home language English - not English ^a	-.410
H.S. Language - English - not English ^a	-.397
Born in Canada ^a	.325
English Entry Level ^a	.283
High school average ^a	-.275
Years in Canada ^a	.120

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
 Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

TABLE 175

SUMMARY OF TRIANGULATION RESULTS

Station	Order of Station	Order of Station	Order of Station
1. 1st Order Station	2. 2nd Order Station	3. 3rd Order Station	4. 4th Order Station
5. 5th Order Station	6. 6th Order Station	7. 7th Order Station	8. 8th Order Station
9. 9th Order Station	10. 10th Order Station	11. 11th Order Station	12. 12th Order Station
13. 13th Order Station	14. 14th Order Station	15. 15th Order Station	16. 16th Order Station
17. 17th Order Station	18. 18th Order Station	19. 19th Order Station	20. 20th Order Station
21. 21st Order Station	22. 22nd Order Station	23. 23rd Order Station	24. 24th Order Station
25. 25th Order Station	26. 26th Order Station	27. 27th Order Station	28. 28th Order Station
29. 29th Order Station	30. 30th Order Station	31. 31st Order Station	32. 32nd Order Station
33. 33rd Order Station	34. 34th Order Station	35. 35th Order Station	36. 36th Order Station
37. 37th Order Station	38. 38th Order Station	39. 39th Order Station	40. 40th Order Station
41. 41st Order Station	42. 42nd Order Station	43. 43rd Order Station	44. 44th Order Station
45. 45th Order Station	46. 46th Order Station	47. 47th Order Station	48. 48th Order Station
49. 49th Order Station	50. 50th Order Station	51. 51st Order Station	52. 52nd Order Station
53. 53rd Order Station	54. 54th Order Station	55. 55th Order Station	56. 56th Order Station
57. 57th Order Station	58. 58th Order Station	59. 59th Order Station	60. 60th Order Station
61. 61st Order Station	62. 62nd Order Station	63. 63rd Order Station	64. 64th Order Station
65. 65th Order Station	66. 66th Order Station	67. 67th Order Station	68. 68th Order Station
69. 69th Order Station	70. 70th Order Station	71. 71st Order Station	72. 72nd Order Station
73. 73rd Order Station	74. 74th Order Station	75. 75th Order Station	76. 76th Order Station
77. 77th Order Station	78. 78th Order Station	79. 79th Order Station	80. 80th Order Station
81. 81st Order Station	82. 82nd Order Station	83. 83rd Order Station	84. 84th Order Station
85. 85th Order Station	86. 86th Order Station	87. 87th Order Station	88. 88th Order Station
89. 89th Order Station	90. 90th Order Station	91. 91st Order Station	92. 92nd Order Station
93. 93rd Order Station	94. 94th Order Station	95. 95th Order Station	96. 96th Order Station
97. 97th Order Station	98. 98th Order Station	99. 99th Order Station	100. 100th Order Station

APPENDIX P

SUMMARY OF TRIANGULATION RESULTS

SUMMARY OF TRIANGULATION RESULTS

Table 138
Summary Table of Triangulation Results

Hypothesis	function 1	Lowest Sig. of F to Enter	Triangulation
Number of English Completed:			
Father born in Canada	1.000		Although no significance was found, <i>Both parents born in Canada</i> was the closest independent variable to significance with $p=0.101$
Both parents born in Canada	1.000		
Mother born in Canada	0.827		
Both parents born outside of Canada	-0.793		
Number of Humanities Completed:			
Father born in Canada		0.50	No significance was found, but <i>Both parents born in Canada</i> was the closest independent variable to significance with $p=0.056$
Both parents born in Canada		0.50	
Number of English Failed:			
English entry placement level	1.000		Significance was found with <i>English entry placement level</i> ($p=0.013$) and with <i>Both Parents born in Canada</i> ($p=0.004$).
Primary home language (English – Not-English)	-0.434		
Years in Canada	0.433		
Both parents born outside of Canada	-0.415		
Mother born in Canada	0.415		
Born in Canada	0.274		
Father born in Canada	0.267		
Both parents born in Canada	0.267		
Number of Humanities Failed:			
Mother born in Canada		0.071	Significance was found with <i>Both Parents born in Canada</i> ($p=0.000$).
Father born in Canada		0.200	
Both parents born in Canada		0.200	
All English completed by end of 5th semester (yes/no):			
Father born in Canada	1.000		Significance was found with <i>Both Parents born in Canada</i> ($p=0.000$).
Both parents born in Canada	1.000		
Mother born in Canada	0.802		
Both parents born outside of Canada	-0.759		
All Humanities completed by end of 5th semester (yes/no):			
Father born in Canada	1.000		Significance was found with <i>Both Parents born in Canada</i> ($p=0.031$).
Both parents born in Canada	1.000		
Mother born in Canada	0.822		
Both parents born outside of Canada	-0.757		
Combined English and Humanities left after 5th semester:			
Father born in Canada	1.000		Significance was found with <i>Both Parents born in Canada</i> ($p=0.046$).
Both parents born in Canada	1.000		
Mother born in Canada	0.811		
Both parents born outside of Canada	-0.770		